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JULY, 1941

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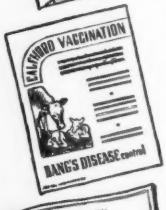

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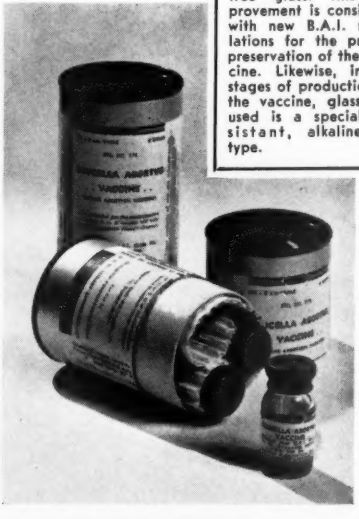

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VETERINARY MEDICINE

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Leading Publication in the Veterinary Field for More Than Thirty Years

VOL. XXXVI JULY, 1941 No. 7

In 1939 the U. S. army possessed 22,295 horses and mules; in 1940 this number was increased to 27,000. Quartermaster plans for 1941 call for the purchase of 28,000 animals.

A cavalry division in the U. S. army requires approximately 12,000 animals. There is one such division at Ft. Bliss (El Paso, Tex.), another in the process of formation at Ft. Riley, Kans., and a third is being planned.

There are approximately 700 stallions in the army remount service. They sire about 14,000 colts annually. Japan has nearly 3000 stallions in its army remount service and plans for 7,500 such stallions by 1945.

Franco began the civil war in Spain with five cavalry squadrons. Although supported by mechanized war equipment of both Germany and Italy, he increased his cavalry to 60 squadrons before he won.

It was the horse and the wheel that moved man out of the caves and started him on his way to civilization. The machine age has not affected the inherent attraction the horse possesses for man. The use of the horse for pleasure has increased rapidly in the past few years. It benefits the farmer who has grain to sell, the equipment dealers and most of all those who ride. The man or woman astride a horse is sitting on top of the world. There sat Genghis Khan, Xenophon, Alexander the Great, Napoleon, Wellington, Washington, Grant and Pershing, and innumerable others of the leaders and rulers of mankind, all masters of horsemanship.

In southern Bulgaria the German army was forced to rely upon horses for transportation because of the bad roads and it was not until it reached the Vardar valley that it was able to bring its panzer (mechanized) divisions into action.

Germany used 200,000 horses in the Polish blitzkreig and nearly four times this number in the campaign in the low countries and France. There are more horses in use by the German army now than at any time during World War I. In large measure, these have been requisitioned from conquered countries. All stallions suitable for siring army remounts have been systematically collected in invaded countries and sent to Germany.

Ten Famous Horses

1. Meg, in "Tam O'Shanter," by Robert Burns.
2. Lightfoot, in "Peter Rugg, the Missing Man," by William Austin.
3. Winnie, in "Lorna Doone," by Richard Blackmore.
4. Black Beauty in "Black Beauty," by Anna Sewell.
4. Rosinante, in "Don Quixote," by Cervantes.
6. Silver Blaze, in "Memoirs of Sherlock Holmes," by Conan Doyle.
7. Black Bess, in "Dick Turpin's Ride," by Alfred Noyes.
8. Gunpowder, in "The Legend of Sleepy Hollow," by Washington Irving.
9. Pegasus, in "Parnassus on Wheels," by Morley.
10. Roland, in "How They Carried the Good news from Ghent to Aix," by Robert Browning.—*Our Dumb Animals.*

Veterinary Medicine Officially Recognized Essential to the National Food Supply

Veterinarians and Veterinary Students Placed in Deferred Classes in Selective Service

"The veterinarian of today is primarily a guardian of the nation's food supply," Brig. Gen. Louis D. Hershey, deputy director of Selective Service, stated to the state and local Selective Service Boards, May 17th.

Recommending deferment from military training of veterinarians and veterinary students, General Hershey cited that surveys made by the Office of Production Management, have revealed a national over-all shortage in the profession that constitutes a menace to the success of the National Defense program.

He said: "Reports from the Office of Production Management and from the War Department demonstrate that the veterinary profession is engaged in an activity essential to the national health. A serious interruption or delay in its functioning is likely to impede the National Defense Program. O. P. M. surveys have shown there are approximately 12,000 graduate veterinarians practicing in the United States. This number has been practically static for a decade; the graduates from the 10 accredited colleges in this country having been only barely sufficient to offset deaths and retirement.

"Somewhat more than 80% of the practicing veterinarians," General Hershey said, "are located in 14 major live stock states and are engaged in the protection of farm animals from loss due to disease. The other 20% is engaged in the inspection and safeguarding of food of animal origin, meat, poultry and dairy products."

In classifying individual veterinarians and individual veterinary students, General Hershey declared local boards must keep in mind first the needs of their communities, but they must take into consideration also the existing, national, over-all shortage in the profession, and the vital imporance of the food and live stock industry to national health.

In urging the deferment from military training of all students who give promise of becoming veterinarians, General Hershey said: "Currently there are approximately 500 graduates entering the veterinary profession each year. This represents the only source of supply for future requirements necessary to supplement the present forces of the veterinary profession. There are no replacements for veterinary students who are withdrawn from school. Consequently," he said, "if the supply of veterinary students who will graduate are reduced by their induction into military service in a non-professional capacity, an aggravation of the increasing over-all national shortage will result."

Veterinarians already inducted into the military service under the Selective Service Act, or who shall be inducted in the future, may apply immediately for commissions in the Veterinary Reserve and, if found qualified, will be commissioned and placed on active duty; thus having to serve in an enlisted status but a short time.

Since the Army Veterinary Reserve quota is filled at the present time, there is no means by which additional commissions in that branch may be obtained until veterinarians have been actually inducted into military service by the local draft boards and come under army control. This new regulation is the result of a recommendation by the Surgeon General, which was approved by the War Department.

The deferment of veterinary students beyond June 30th of this year and the deferment of veterinarians within the draft ages at the discretion of local draft boards, as indicated in the foregoing, are also the result of a recommendation by the Office of the Surgeon General and various other offices.

It is most fortunate at this time of emergency that the Surgeon General has for his veterinary advisor an officer with the broad understanding of the significance of veterinary service to the army and the nation that Colonel Kelser possesses.

FACULTY OF THE COLLEGE OF VETERINARY MEDICINE, THE OHIO STATE UNIVERSITY
Top Row (Left to Right): Arthur N. Gorelick, Ray M. Batchelder, John H. Knapp, Clifford Westerfield, Harry M. Mauger, Jr., John H. Helwig, Chester Gleiser, Edward T. Marsh, Gene V. Foust
Middle Row: Julia Ann Gutman, Fleetwood R. Koutz, Fred J. Kingma, Everett L. Dakan, Floyd S. Markham, Walter R. Krill, Bruce H. Edgington, Walter R. Hobbs, John W. Mills, Eleanor Graham
Bottom Row: Arthur F. Schalk, James D. Grossman, John F. Lyman, Oscar V. Brumley, Leonard W. Goss, Carl W. Gay, Willard F. Guard, Russell E. Rebrassier, Derwin W. Ashcraft
One veterinary faculty member, Roy E. Nichols, was not present when this picture was taken

Creamery Industry Wakes (?) After 40 Years

The most promising project yet undertaken for the improvement of the dairy industry was launched in Chicago March 20th with appropriate fanfare at a conference of manufacturers and distributors of dairy products and allied industries. The conference, attended by practically every top-flight creamery executive in the country, was sponsored by the American Butter Institute to launch its 1941 drive for improvement in the quality of cream and butter.

Quoting *Dairy Produce*:

The enemy at whom the drive points is an old and relentless foe. Partners in the axis of undergrade butter are competition, volume urge, and general apathy. Together this trio has stood off every challenge for 40 years.

Butter manufacturers know that the fruitless campaigning for cream improvement in the past makes their present undertaking a stiff one. Farmers have seen many cream campaigns fizzle out over the years and their skepticism will not be easy to dissipate especially in areas where the producers are not dairy conscious.

This sudden interest of the creamery industry in improvement in its products which should have been accomplished more than "40 years" ago stem from a brief period of activity in this field last summer by the Food and Drug Administration which "proved that those who traffic in unfit cream must contend with the risk of ruinous losses from seizures and condemnations." With the new setup under the amended food and drug law more rigorous enforcement of the laws against the interstate traffic in unwholesome, unfit and dangerous food products is expected.

A 15-point program to meet this situation of more than "40 years" duration was adopted by the industry. In the words of N. W. Hepburn, Chairman of the American Butter Institute, "in essence it consists in adherence to a determined, hard-hitting, unwavering course of action by every member of the industry."

The element that makes the present educational program promising where previous programs have fizzled is the attitude of J. O. Clark, Chief of the central district, federal Food and Drug Administration. In addressing the conference he said:

"Cream that heretofore has been regarded as bad will disappear entirely. Cream that in the recent past has been considered 'pretty good' will come to be regarded as unfit, while cream now regarded as 'fine' will be only average.

"The food and drug administration will enforce the cream law uniformly, but the offender that deliberately evades the law or boasts that he is 'not going to play ball' will be closely watched.

"Unless this [the industry educational program] is backed up by rigid rejection of unfit cream, the education will have very little effect."

In opening the conference Mr. Hepburn stated:

"The most pressing, the most vitally necessary task before the creamery butter industry today is cream quality improvement.

"The industry's job is a big one—a job that must be tackled afresh—right now!

"The industry is to be judged not by what its members say or think, but *by what they do.*"

Public Health Heroes

The names of Noguchi, who died, and Major Walter Reed, who risked his life, in the fight against yellow fever; and of Sir David Bruce, who braved the tropical heat of Africa to prove that the tsetse fly carries sleeping sickness, are familiar to everyone. Not so well known, but perhaps equally deserving the recognition accorded those who risk their lives for the welfare of humanity, are the members of the federal Public Health Service personnel, who daily carry out experiments with such deadly diseases as typhus, tularemia, and psittacosis. There have been 168 cases of infections contracted in the regular line of duty in the Public Health Service; 17 of these terminated fatally. Most disastrous of the maladies contracted by workers has been Rocky Mountain spotted fever, with four fatalities and 12 recoveries. Next on the list is typhus, with two deaths and five recoveries. The record for the greatest number of laboratory infections is held by Dr. Edward Francis, of the National Institute of Health, who contracted dengue fever and tularemia in 1913; undulant fever in 1928; psittacosis in 1930; and relapsing fever in 1940. Runners-up are Drs. George McCoy (typhoid fever and dengue in 1907; tularemia in 1910) and Charles Armstrong (dengue, 1923; psittacosis, 1930; choriomeningitis, 1935).

* * * *

There are now in Britain more than 500 American ambulances and motorized surgical or first-aid units kept in readiness to relieve air raid victims or move hospital patients to quiet areas. About half of them are operated by the American Ambulance in Great Britain, of which Charles G. Osborne, who was in charge of Red Cross transportation in France during the last war, is director. The others are run by the American Red Cross and the British-American Volunteer Ambulance. About $1,000,000, enough for the first year's operations, has been donated by Americans to keep the ambulances ready.—*Chicago Tribune Press Service.*

At the close of 1940, California was maintaining supervision over 14 approved municipal inspection systems covering 175 establishments. At the request of the board of health commissioners of Los Angeles, state inspection of 65 establishments in that city was inaugurated on November 1st. They had formerly been under local approved inspection. California's state-wide meat inspection service is modeled closely upon that of the federal B. A. I.

* * * *

More Locker Plants

The frozen-food locker industry continues to grow. The 1940 count, made by state extension workers, shows a total of approximately 2900 such plants located in 44 different states. This is an increase of more than 1000 plants as compared with the 1939 figures, and an addition of six new states. The 1938 figures were 1269 plants located in 33 states.

The 1940 data showed that Iowa led with 450 locker plants in operation. Next was Washington with 325, followed by Minnesota and Wisconsin with 275 each, Oregon with 223, Illinois with 164, Nebraska with 163, and Kansas with 125.—*Country Gentleman*

* * * *

Thirty cases of scarlet fever in 13 families in and near the hamlet of Pulteney in Steuben County, New York, recently were traced to the use of raw milk from one dealer in all but two instances. The first eight cases appeared between December 22, 1940, and January 15, 1941, and 22 cases in the next nine days. The earliest case occurred on one of three farms that supplied the suspected dealer, and a cow was found to have acute mastitis. Milk from the infected cow showed hemolytic streptococci of the group commonly encountered in human infection, and the same organisms were found in throat cultures from some of the patients. Pasteurization of the suspected milk supply was begun January 23rd, and no more cases occurred after January 25th, *Health News* reports. The infected cow was slaughtered.—*J. A. M. A.*

Equine Encephalomyelitis Eastern Type Discovered in Texas

About 60 cases of equine encephalomyelitis occurred on the Boca Chica flats east of Brownsville, Texas, last April. Col. C. C. Whitney, station veterinarian at Ft. Brown, sent the brain of one of the victims to the Army Veterinary School, Army Medical Center, Washington, D. C., where Lt. Col. Raymond Randall, V. C., and 1st Lt. Ervin A. Eichhorn, Vet. Res., determined by guinea pig inoculation that the disease was due to the eastern type of encephalomyelitis virus. In only one other instance (in Alabama) has the eastern type virus been isolated from cases occurring west of the Appalachian Mountains.

Importance of Horses in Modern Warfare

During the World War the United States alone exported to Europe 923,580 horses and 232,475 mules. On both sides there were engaged possibly four times this number of animals, or a total of 4,624,220.

In the late Civil War in Spain, Franco, with all the outside aid he received (principally mechanized), had to create finally a new balance in his forces in favor of animal elements before he could win the war. His horse cavalry alone was increased from 5 to 60 squadrons.

Italy over-rated the versatility of her mechanized forces in her war on Ethiopia and had to create a new balance in favor of all sorts and types of animals, including oxen and burros.

Japan miscalculated her balance in mechanization in her recent and present wars in Manchukuo and China. As a result, she has greatly augmented her animal components in her present armies and has provided for the future production of military horses on a large scale.

Germany for many years has been one of the leading nations of the world in producing horses for military use. Her remount service during the reign of Kaiser Wilhelm II attained a high state of development and efficiency. During the Hitler regime the remount activities of Germany have been increased.—*Col. Edward N. Hardy, Chief of the Army Remount Service*

B. A. I. Produces Six Million CC's of Brucella Antigen

The production of Brucella antigen by the Bureau of Animal Industry was undertaken at the request of the U. S. Live Stock Sanitary Association and other organizations interested in the suppression of Brucellosis in cattle. From July 1939 to November 1940, a period of 17 months, approximately 6,000,000 cubic centimeters of antigen were produced and distributed to cooperating laboratories by the Bureau of Animal Industry. This was used to conduct about 10,000,000 official tests.

The primary purpose in the production of this antigen by the Bureau was that every laboratory might have a uniform agent upon which to base its diagnosis of the disease. Every step in the preparation of the antigen is rigidly controlled. More than 3,000 guinea pigs have been used in tests, and more than 23,000 agglutination tests were made in an effort to maintain standard sensitivities of the product. On numerous occasions laboratories have been requested to return samples of antigen to determine whether or not a change in sensitivity has resulted due to shipping and storage. No such change has been noted.

Equine Encephalomyelitis

Immunizing horses against encephalomyelitis by intradermal vaccination is described in a report by Dr. John R. Mohler, Chief of the Bureau of Animal Industry, U. S. Department of Agriculture. Former methods gave rise to some undesirable reactions and in some cases, it was reported, caused deaths, but injection of the vaccine into the skin has yet to reveal unfavorable results. It is estimated that about 1,000,000 animals were vaccinated last year.

The report is based on information supplied cooperatively to the Bureau by state live stock sanitary officials, state experiment stations, state extension veterinarians, county agents, and Bureau inspectors. Over 96% of the cases were from 22 states west of the Mississippi River, less than 4% occurring in 16 states east of the river. Veterinarians may obtain a copy of the report from the Bureau of Animal Industry, Department of Agriculture, Washington, D. C.

Iowa Experiment in Disease Control—II.

In 1913 the federal B. A. I. sent Dr. O. B. Hess and Dr. J. S. Koen and a small force of assistants to Dallas County, Iowa, to carry out an experiment in the control of hog cholera in the field by the use of the then new serum-virus vaccination for the prevention of the disease. The demonstration in Dallas County, together with similar demonstrations in Missouri, Indiana and Nebraska, which were carried on simultaneously with that in Iowa, were at the time and since regarded as having shown conclusively that anti-hog cholera serum and virus properly used can hold hog cholera losses at a low level and make safe the production of swine, so far as this disease is concerned. At that time experience with hog cholera had already shown to the complete satisfaction of everyone that swine raising in the Corn Belt on any considerable scale was extremely hazardous without the prophylactic.

Notwithstanding the universal acceptance of the findings in Dallas County for 25 years and the general experience of swine raisers for 88 years, Dr. W. D. Kinney of Cerro Gordo County, Iowa, didn't accept them and decided to carry out an experiment of his own to show that hogs can be raised in Iowa profitably and safely without the protection of immunity against hog cholera produced by serum and virus. And he succeeded—for three years. By that time his herd had increased to approximately 7000 animals. And then the deluge!

According to local report, Doctor Kinney is an anticruelty advocate, which is commendable; an antivivisectionist, which depends; and an antivaccinationist, which is just plain dumb. Accepting this makes it possible to understand why he would steadfastly maintain there was nothing ailing his herd more serious than abortion resulting from enteritis until more than 40 tons of dead animals had been trucked away to the rendering works.

Just when cholera broke out in this herd is not clear. It was not until the daily toll of dead animals was disturbing that any veterinarian was called. And when one was called, it was one who is in the proprietary swine remedy business and has not been in practice for 15 years or longer. His diagnosis was "necrotic enteritis," and his enteritis remedy unavailing. However, his "line" was so good that he did not lose and has not to this day lost the confidence of the herd owner. He was retained as a sort of personal veterinary adviser and more skilled veterinarians were called to determine the real cause of trouble in the herd.

Dr. J. B. Spearing, Manly, next saw the herd and pronounced the ailment hog cholera. Asked to vaccinate the animals he declined, telling the owner there would inevitably be a further loss and he didn't fancy a position where it could be laid at his door.

The number of hogs found dead each morning was increasing. Eighty-four thousand pounds of carcasses had already been sent to the rendering works when on Aug. 13, 1940, Dr. G. W. Cady, Mason City, Ia., was called to the farm. His diagnosis was cholera. At this time the owner thought "most of the original herd was still alive." Doctor Cady gave it as his opinion that vaccination of the major portion of these would be worth while and the only possible chance of saving any considerable number. Given the order to go ahead, he vaccinated about 4,500 of them.

The veterinary adviser insisted on his diagnosis of enteritis even after the herd had been treated and criticized the use of the serum-virus treatment. On the day following the vaccination of the herd two of the sick animals that had not been vaccinated were taken to the veterinary college, where a diagnosis of hog cholera was again made.

As was to be expected in a herd so severely affected with hog cholera, the daily losses continued to rise for a time after vaccination and, according to the owner's claim, 1,477, or just about one-third of those vac-

cinated, died.* The vaccination fee was not paid and Doctor Cady placed a lien for $1,566.87 on the herd. The owner countered with a suit for $27,907, for the loss of the hogs that had died after vaccination—450 brood sows valued at $18,500; 27 boars valued at $945; 112 barrows valued at $1,232, and 888 spring pigs valued at $7,230.

The trial lasted nearly three weeks and attracted much attention. A number of veterinarians were subpoenaed as witnesses, and all save the herd owner's personal veterinary adviser testified that the treatment of the herd had been the proper one. The trial ended in a directed verdict for the defendant (Doctor Cady).

After the trial Doctor Cady entered a claim for $10,000 damages to his professional reputation and $10,000 punitive damages, because of libel and slander which he averred Doctor Kinney had publicly uttered on Oct. 3, 1940. The jury promptly awarded him $8,500—a very large award for personal damage other than physical injuries.

There is nothing in the findings in this experiment that invalidates the Dallas County experiment of 28 years ago. It is unfortunate that the experimenter's loss in hogs should have been so heavy. But he can easily afford it financially. It is still more unfortunate that having backed his judgment and lost, he should vent his spleen upon the only one who had really helped him—the veterinarian who not only had not caused him the loss of nearly 1,500 animals, but had actually saved him the loss of approximately twice that number. The lesson for veterinarians in the matter seems to lie in the emphasis it gives to the necessity for the most complete understanding when undertaking the control of any outbreak of disease where the outcome must inevitably be unsatisfactory to the owner. Salvage operations in severe outbreaks of hog cholera are almost always a headache for the veterinarian who undertakes them.

*It developed during the trial that nobody knew how many hogs were vaccinated or how many of those that died later had been vaccinated. The veterinary adviser undertook to count the number vaccinated but failed to do so. Information as to the number of animals that had died before the herd was vaccinated was obtainable only from the weights of the truck loads received by the rendering plant.

Contrasting Policies

Throughout the long trial of the American Medical Association, the Medical Association of the District of Columbia, and various officials of each organization for conspiracy to violate the Sherman Act, and for weeks afterward, the *Journal of the American Medical Association* published up to 50 pages weekly concerning the trial in this important test case involving in its broader aspects the legal status of group health insurance and the extent to which associations of private practitioners may legitimately oppose it. The complete, verbatim testimony of witnesses, rulings and instructions of the court, copies of the exhibits, motions, and in some instances arguments of the attorneys, were published week by week for the information of all the members of both associations.

Just a few years ago the A. V. M. A. was involved in prolonged litigation that cost it for attorney fees alone more than $3,500—money belonging to the members—but not one word about the affair was published in its official journal, nor was any report of the matter made to the association at any of its annual meetings or elsewhere. All official discussion was kept within the Executive Board and held in hushed voices behind closed doors. Not 10% of the members know to this day the details of the matter, nor has the membership at large knowledge of it other than garbled reports via the grapevine telegraph.

Since 1925 the *Journal of the American Medical Association* has published several weeks in advance of its annual meeting reports of the officers, councils, and committees of the Association, and, so far as they may be available, resolutions to come before the meeting. The stated object of this is to permit consideration and discussion of these matters by constituent associations and in the medical press and to enable members of the House of Delegates to study them before acting upon them.

In pursuance of this policy of keeping the members of the A. M. A. informed as to the activities of its officers and committees, the *Jour. A. M. A.* included 38 pages of such reports in the issue of April 19th. These

matters are to come before the annual meeting in Cleveland in June.

April 1, 1941, the number of enrolled members was 118,441, the largest ever reported to the House of Delegates.

Gross income from all sources for the year ended Dec. 30, 1940, amounted to $1,876,353.80, an increase of $77,586.98 over that of the previous year. Total expense for the year 1940 was $1,688,585.50, an increase of $4,617.45 over expense incurred in 1939.

Expenditures incident to the operation of the various councils, bureaus and departments of the Association in 1940 amounted to $482,510.35 as compared with $484,052.06 in 1939 and $458,499.27 in 1938. Although expense incurred by the Bureau of Exhibits was reduced in 1940 by the sum of $25,531.91 as the result of the discontinuance of Association exhibits at world's fairs, this reduction was offset by expenditures on account of the work of the Committee on Medical Preparedness, which amounted to $27,238.97.

The net paid weekly average circulation of the *Journal* in 1940 was 98,002. The *Journal* receives for publication each year 3000 articles that discuss every phase of scientific medicine, including surgery, diseases of the skin and of the nervous system and practically every other disease which may occur to man and even, sometimes, to animals; the editors select from those 3000 articles approximately 600 which are considered acceptable for publication.

A most significant development in the *Journal* during the past year has been the addition of a section devoted to medical preparedness. Here are published announcements coming from the Army, the Navy, and the United States Public Health Service, as well as orders to physicians who are taken into the service of the Army and Navy. The publication of this section of the *Journal* has served to produce cooperation and coordination among those interested in medical preparedness.

In 1940 more than 78,000 newspaper stories based on articles in the *Journal* and in *Hygeia* appeared in the daily press of the United States. This total does not include feature stories and editorials in daily newspapers pertaining to information published by the Association, the number of which is constantly increasing. These newspaper stories are furnished the press through the *American Medical Association News*, a weekly publication containing abstracts of articles appearing in the various periodicals of the Association. The mailing list of this publication includes 325 daily newspapers, 77 news services, radio stations and miscellaneous publications, 40 local and state health departments, 51 nongovernmental health and tuberculosis associations, 82 county and local medical societies, 87 national medical organizations, 28 science writers, 60 pharmaceutic associations and manufacturing companies, 45 industrial organizations, and 17 educational institutions. In addition, 86 copies are sent weekly to various constituent state and territorial medical associations, some of which receive several extra copies for distribution to the smaller newspapers in their states. All names on the mailing list of the *A. M. A. News* have been placed there by request. No charge is made for the publication. Of particular importance in 1940 was the increased use of information from the Association, particularly from the *A. M. A. News*, by radio stations in news broadcasts. The number of stations using information furnished by the Association is constantly increasing.

In cooperation with the Division of Medical Sciences of the National Research Council, the A. M. A. began publication in January, 1941, of a new periodical called *War Medicine*. Its editorial board is the Committee on Information of the National Research Council, of which Dr. Morris Fishbein is chairman. There are cooperating editorial associates from the United States Army and Navy Medical Corps and from the United States Public Health Service.

The name of the Council on Foods was changed in 1940 to the Council on Foods and Nutrition. There is now under way a plan of revising the scope of the work of the Council so that particular attention may be directed to foods intended especially for infants, for the sick and for special dietary purposes.

The Bureau of Health Education cooperated, as in the past, with the Committee for the Protection of Medical Research and in May distributed 6000 copies of the pamphlet entitled "Animals in Research" to the members of graduating classes of medical schools.

INDIANAPOLIS—
A. V. M. A. 1941 Convention City

THE Soldiers and Sailors Monument shown on this page is located in the center of downtown Indianapolis in which city the 78th annual convention of the American Veterinary Medical Association will be held August 11 to 15, 1941. The Monument is second only to the Washington Monument in height and is declared to be the finest piece of monumental architecture in the world. It has an elevator to carry sightseers to the top where the entire city may be seen. In the basement is a war museum.

Special automobile races at the Indianapolis Speedway, scene of the famous racing classic each May 30th, will be provided for members of the association and their wives. The Committee on Local Arrangements announces that two ten-mile races and a five-mile race will be staged at the Speedway on the afternoon of Thursday, August 14th, in addition to a tire changing contest. Four racing cars manned by nationally known drivers will participate in the events.

This is one of many entertainment features that have been planned for the entertainment of veterinarians attending the Indianapolis meeting. The president's reception and ball, the annual banquet and ball, alumni dinners, and luncheons and card parties for the ladies are included in the entertainment program of the convention.

The banquet hall in the Scottish Rite Cathedral is one of the most attractive and spacious rooms in which the annual banquet has ever been held. Following the banquet, prominent orchestras will provide music for dancing in the cathedral's two handsome ballrooms.

On Tuesday night of convention week,

the president's reception and ball will take place in the Murat Temple and Shrine Theatre. Alumni dinners and sightseeing trips in and around the city are planned for the amusement of everyone attending the 1941 convention.

The Dog Food Testing Program

Too many have been inclined to look upon the dog food approval project, which the A. V. M. A. is supporting, as just an innocent futility which, if it does no good, can do no harm. It may eventually work out that way and again it may bring into question the good name of the association and of the profession.

Seals of acceptance or approval are not new. They have been issued by various firms, institutions, associations, etc. Of them all, only three have attained any degree of public acceptance or have achieved any reputation for having been awarded because of merit. These are the seals of Good Housekeeping Institute and of the Council on Pharmacy and Chemistry and the Council on Foods and Nutrition of the American Medical Association.

It is noteworthy that of these three, that have obtained measurable success, in none of them does any money pass from the receiver to the giver of the seal. In the words of an official of the A. M. A., "the passage of money is repugnant to the principal of an impartial award." Further, in no instance are applications for seals solicited. On the contrary, when applications are voluntarily received, a careful investigation is first of all made to ascertain if the public interest will be served by issuance of a seal, provided it is merited. There is no agreement or even presumption that the issuer of the seal will be in any way remunerated for awarding it. There is no obligation of the seal holder even to advertise in Good Housekeeping Magazine or in any of the magazines published by the A. M. A., and, as a matter of fact, 75% of those receiving seals are not and do not become advertisers in any magazine even remotely connected with the donor of the seal. Notwithstanding all this care to keep the issuing of seals "on the level," Good Housekeeping has recently been involved in litigation with the Federal Trade Commission, which is stated to have cost it already more than 50 thousand dollars, and the end is not in sight.

The A. M. A. has so far escaped litigation over the issuance of seals; but it is worth noting that its standards are published and adhered to; that every detail of its tests is made public and is open to investigation, and that it does not issue any seals of "approval" as the A. V. M. A. is doing, but only seals of "acceptance"; and never in the name of the association, but only in the name of the Council on Chemistry and Pharmacy, or of the Council on Foods and Nutrition, as the case may be.

Further, be it noted that no food containing meat or a meat product will be even investigated if such meat or meat product or any part of it originates in a plant not having Federal meat inspection. Even though the A. M. A. has never been really friendly to the veterinary profession, it recognizes the high standard of veterinary meat inspection as carried out by the Bureau of Animal Industry, and will not recognize as wholesome, meat that has not passed this inspection. In the A. V. M. A. dog food approval program, the Federal meat inspection service and sanitary supervision of meat processing establishments is ignored.

Apparently the A. M. A. has come to the conclusion, recently, that it is operating somewhat out of its field in undertaking certification of products in the general field of nutrition and plans to gradually narrow its field to food primarily for infants, invalids and convalescents.

It is not necessary, of course, that the A. V. M. A. in undertaking to certify to the quality of dog food, should follow the plans adopted by others in certification. It appears the part of wisdom, however, to study the experience of others and profit by it. It is merely stating what is common knowledge to say that, under the present plan, the dog food industry regards the seals of approval as being sold; even the holders of seals, or at least one of them, looks upon its own seal as having been bought, and with it the support of the veterinary association. When a responsible official of one of the companies that had just obtained an A. V. M. A. seal of approval was approached on the matter of advertising, he

exclaimed: "Is that your graft? What kind of a racket is this anyhow? We've paid $950 for your support and now you want us to take advertising and keep on paying. What are we going to get for our $950 anyhow?"

One company official asked permission to have a photograph taken of himself handing a check for $950 to the president of the A. V. M. A. and receiving from the latter the A. V. M. A. seal of approval. And he wanted this photograph for use in his advertising!

At this point, the following quotation from Dean Hagan is timely:[1]

"Almost the only thing about the future of which we can be quite certain is that it will be different from the present. Time changes all things and one does not need to be a prophet to know that out of the present condition of world turmoil marked changes are sure to emerge. I am not pessimistic enough to think that all of our social institutions are about to crumble, but profound changes cannot help but emerge when more normal times return. In the practice of medicine, certain very significant things are happening. . . . Some of the agricultural leaders who are cooperative-minded have been thinking of similar plans for veterinary service, and some plans already have been drawn and are likely to be presented to individual veterinary practitioners soon. It is important that veterinarians beome alive to this situation, and be prepared to discuss such plans intelligently if and when they are proposed."

The obvious comment on the foregoing is that the A. V. M. A. has plenty of problems facing it without taking up the dog food testing program of another organization.

But if it is deemed that the program must be continued for the present, certain overdue reforms should be instituted at once, among them:

1. Establish a minimum biological and chemical standard for approved foods. A standard that will definitely preclude the grossly inferior and the worthless foods now on the market.

2. Require reasonable, if not strict, sanitary regulations for dog food manufacturers' plants and processes. At the present some of them are as repulsive as the old-time slaughter house except larger and more filthy. Since the association would have no means of determining if such regulations were observed it would be more practical to limit canned food to plants operating under B. A. I. inspection.

3. Permit the use of meat and meat products only from plants having B.A.I. meat inspection. Meat products from scavengers should be out.

4. Reduce drastically the cost of the seal of approval (there should be no charge for it). At present, regardless of how it is camouflaged, most of the funds contributed by the seal holders is spent in promoting the scheme—in attempts to sell the scheme to their competitors. This certainly is not a legitimate charge against inspection.

5. Include veterinarians on the scientific council. If veterinarians are competent to inspect meat for human consumption, they must be competent to at least assist in the inspection of dog food.

6. List foods (if any) that fail to pass the test, as well as those that do. The present plan is to withhold this information as an inducement to a manufacturer to "take a chance." If he wins, he gets a seal; if he doesn't, it will be kept a secret. This is not in the best interest of the veterinarian. Obviously it will be long before approved foods will be available to all. Many must, by choice or necessity, feed unapproved foods. Ninety-nine per cent of dogs must eat unapproved foods or starve. None would have to eat rejected foods if their owners or their veterinarians were informed which have been rejected. Other food councils, sure of their findings, publish them "letting the chips fall where they will."

It is realized, of course, that the first three requirements reduce the possible seal holders to a fraction of the hundred grandiloquently discussed when this scheme was inaugurated. Nevertheless the requirement of a standard for the measuring of quality is just common sense.

The fourth requirement is essential to a reputation for probity.

Other reforms are desirable as will be pointed out; these are among the most urgent and most overdue.

[1] Hagan, W. A. 1941. What about the future of Veterinary Practice? *The Cornell Veterinarian*, 31:2, P. 101.

Poultry Disease in Michigan the Province of the Veterinarian

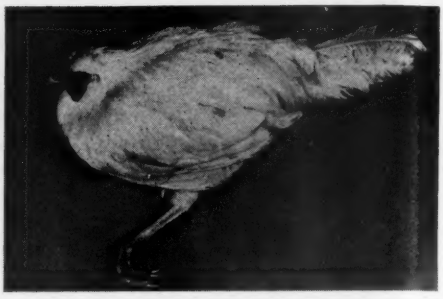
During an outbreak of European fowl pest in 1925, the Michigan Legislature passed a law classifying poultry as live stock. The law has never been repealed and the treating of poultry diseases as in the case of diseases in higher types of live stock is under the supervision of the Commissioner of Agriculture and the State Veterinarian. To be qualified to diagnose and treat poultry diseases, it is necessary for one to fulfill the requirements of Act No. 244 of Public Acts of 1907 and become a licensed veterinarian.

Unfortunately, the law has not been enforced and the diagnosis and treatment of poultry diseases, in too great an amount, has been in the hands of laymen. Many of this large group do not have the basic training or the inclination to acquire the knowledge which would enable them to render a service to poultrymen. It can be written with little chance of contradiction that the goal of this group is to sell remedies. Owing to the activity of this group, poultry raisers have become over-solicitous of their flocks and are constantly abusing them with conditioners, tonics, worm remedies, coccidiosis preventives, expensive vitamin and mineral supplements, and many worthless nostrums.

Death losses in poultry flocks have long been accepted as a limiting factor in successful poultry raising and there are data to show that death losses in adult flocks are increasing.

Poultry raising in Michigan is the state's second largest major agricultural industry. Poultry is raised on approximately 150,000 Michigan farms and the number of small flocks is steadily increasing. A less noticeable increase is seen in the number of breeder-hatcheries and of specialized poultry farms. It is highly improbable that a time will ever come in Michigan when the bulk of the poultry crop will not be produced by the small flocks as represented by general farm flock.

Many of the small flocks being established represent an attempt by factory and other urban workers to supplement their income during periods of unemployment. The great majority of these people have a limited experience in handling live stock. They have but a minimum of equipment, limited range for young stock, inadequate housing facilities and no thought or knowledge of disease. These factors contribute to heavy death losses in both chicks and pullet flocks and the owners become the easy prey of the unscrupulous remedy salesman.



Fowl paralysis is the greatest single source of economic loss in Michigan poultry flocks, as well as a major problem of the poultry industry elsewhere. A study of the fowl paralysis complex is the first project undertaken at the new Regional Poultry Research Laboratory at East Lansing

Legitimate treatment of diseases based on controlled experimental work or founded on worthwhile clinical data is greatly handicapped in competition with the "specifics" so readily available or forced on poultrymen by door-to-door peddlers.

Most of the deficiency diseases are the result of nostrums used for the prevention of coccidiosis, particularly when sulphur is the active ingredient. The loss of egg production during the period of higher egg prices in the fall and early winter can be attributed to faulty medication such as drastic worm medicines, conditioners and tonics. Some of these medicines may have merit when used in their proper place. The sale of certain vitamin concentrates for the control of fowl paralysis cannot be justified in light of our present knowledge. It is hoped that the new Food, Drug and Cosmetic Act may help in removing spurious remedies from the market. However,

with interstate traffic in medicines being controlled there is already a noticeable increase in small proprietary remedy companies within the state.

Data compiled from the 1,091 consignments of diseased poultry received by the specialist last year show that the major diseases of poultry in Michigan are: the fowl paralysis complex (infectious neurolymphomatosis gallinarum), intestinal parasites, pullorum disease, acute toxemia or colibacillosis, and deficiency diseases. Also there was an increase in the number of consignments showing avian tuberculosis. None of these diseases can be controlled or cured simply by purchasing a remedy and feeding it to the flock.

The economic loss due to these diseases on the 820 consignments represented can be conservatively tabulated as follows:

Disease	Number Consignments	Average Birds in Flock	Average Per cent Loss	Average Value per Bird	Loss
Fowl Paralysis	297	200	35	$1.00	$20,790.00
Parasites	272	200	15	1.00	8,160.00
Pullorum Disease	225	350	40	0.09	2,835.00
Deficiencies	58	350	20	0.15	606.30
Acute Toxemia	47	200	15	1.25	1,380.50
Tuberculosis	21	200	40	1.00	1,680.00

Losses throughout the state in many flocks from which no figures are available defy an estimate, especially if outbreaks of fowl pox, laryngotracheitis and roup be included.—*E. S. Weisner*, in *the Report of the Division of Veterinary Science, Michigan State College*, 1940.

* * * *

Official laying tests have probably done as much to spread dangerous poultry diseases as any other one thing, aside from exhibition shows. In this way they have been and still are a disservice to the poultry industry.—*Poultry Digest.*

* * * *

A fundamental and serious defect of official laying tests, as conducted today, is that they simply are not tests. They are for the most part legalized gambles or lotteries with the element of luck and chance playing such an important part in results that they are only a poor and inconsistent criterion of breeding and production quality. —*Poultry Digest.*

In 1846, eggs sold in New Orleans for $3.00 per barrel (90 dozen).

* * * *

Duck eggs with glossy (fatty) surfaces should be rejected for incubation. Their hatchability is but 50% of that of dry (like chicken) eggs, and the mortality rate among ducklings hatched from such eggs is abnormally high.

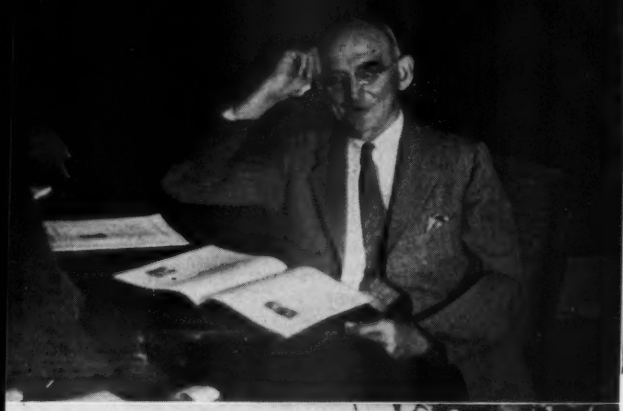
* * * *

When eggs must be washed they should be 20 to 25°F. cooler than the washing solution, according to a Russian investigator. If the eggs are warmer than the washing solution, it will be drawn through the shell by the decreasing pressure within the egg, carrying germs which quickly set up decomposition.

Relief for Dermatitis

Liquid or sticky medicinal agents are not easy to incorporate in dusting powders. But a powder which successfully serves as a carrier for tar, liquids or the like, yet retains its good dusting behavior, is disclosed in U. S. Patent 2,185,178 of January 2, 1940 (Reinhard Beutner, assignor to Parke, Davis and Co.) A phenolformaldehyde resin is melted, the liquid or sticky ingredient is added and the resin, after cooling, is ground to powder. It is nonhygroscopic, remains completely dry though acting as carrier for a liquid or semiliquid, and is itself an antiseptic with analgesic and vasoconstrictive effects.

The same inventor, in U. S. Patent 2,184,575 of December 26, 1939, utilizes a urea-modified phenol-formaldehyde resin to produce a drying ointment, i.e. an ointment which contains a volatile solvent and dries to a nontacky adherent film on the skin. Ointments containing a volatile solvent for this purpose are new to pharmacy.—*Modern Plastics.*



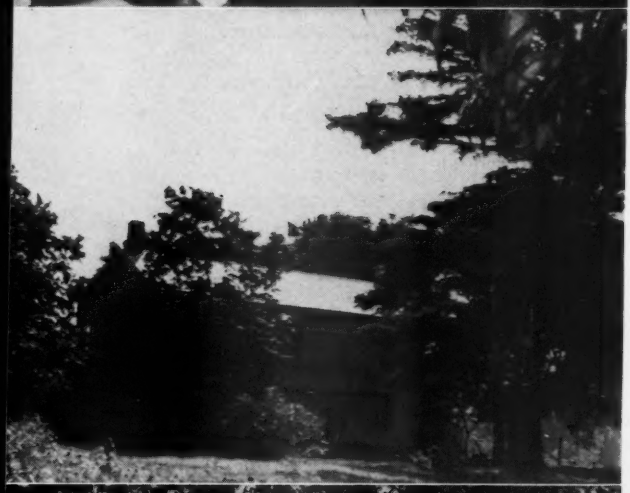


Fig. 1 (left, top). Dr. T. A. Sigler at his desk
Fig. 2 (center). Residence on Sigler Stock Farm, birthplace of Doctor Sigler
Fig. 3 (bottom). Home of Doctor Sigler, Greencastle, Ind.
Fig. 4 (above). Old covered wooden bridge still in use near the old Sigler Home

THE careers of unnumbered veterinarians in this country furnish the material for success stories, did the profession, like business men, indulge themselves in such support for their morale; to biographies of no less general interest than the myriad stories about the family doctor. But the veterinary profession is pragmatic in the sense that it is skilled, matter-of-fact and practical. Although in the annals of history animal diseases influence the destiny of nations; are at the root of famines, plagues, wars, overturned governments and the lapse of civilizations, the veterinary profession has unprotestingly permitted an uninformed public to evaluate its service in terms of fiscal economy only. Far from publishing its fundamental achievement of making the present animal industry and hence the present food supply for the whole people possible, it has been loath to acquaint the public with more than a bare outline of the everyday routine services rendered by its members in the conservation of its animal wealth, guaranteeing the adequacy and wholesomeness of its food and support of its armies.

The literature of the veterinary

Fig. 5 (left). Memorial gate of cemetery, a gift from Doctor Sigler
Fig. 6 (right). Carnation Homestead King (629493), a bull reputed to have killed three of his caretakers

Experiences of a General Practitioner

profession may properly exploit biography only as a source of information or inspiration for its members. It is in that very restricted sense that the writer attempts to convey in words and pictures his experiences while accompanying the subject of this sketch on his round of practice during an early fall day, as it happened a Sunday in September, 1940.

■ Widely as he is known, some introduction is necessary. Thomas A. Sigler, Greencastle, Ind., was born only about 10 miles from the little county seat town in west central Indiana where he has practiced for nearly 40 years. It was, and still is, a religious community, and in the country church near his birthplace he has been frequently of later years invited to occupy the pulpit at the funerals of old settlers and on such special occasions as Memorial Day and Armistice Day. A covered bridge still stands near this church, although such structures have long since all but disappeared the country over. The gateway to the cemetery across the road is a gift to the church from Doctor Sigler, as is the present roof on the church building.

Doctor Sigler was born on a stock farm regarded as the best in the community for a half-century following the Civil War. As he grew to manhood he and his brothers developed an extensive business in buying and selling mules and jacks. At almost any time during the winter months a hundred mules could be seen in the ample barns and four times that number were handled during most seasons. Mule buyers flocked to Sigler Bros. from every southern state east of the Mississippi. The farm became a headquarters for good jacks also, both native and imported; as many as a hundred jacks being distributed yearly to stock farms all over the country. An uncounted number of Missouri mules owed their excellence to sires from this Putnam County farm. All this brought the young man who was soon to set himself up in veterinary practice an extremely extensive and influential acquaintance, an acquaintance that has influenced his career ever since and has been in a measure responsible for extending his practice to one-third of the states in the Union.

Graduating from the Indiana Veterinary College 39 years ago, Doctor Sigler immediately began practice in Greencastle. Among the large practices in the country his has been almost unique in that he has never hospitalized animals, large or small. His has been an office practice and one of calls to the premises of the owners of the animals he has treated. He soon earned a reputation for better surgery and for a score of years has been in demand for surgical demonstrations at veterinary clinics. He has participated in such clinics in most of the states between the Rocky Mountains and New England, and in several provinces of Canada. His wide acquaintance among the leaders of the live stock industry and the reputation earned by his professional services are responsible for the wide distribution of his clientele.

Notwithstanding the demands made upon his time and strength by his practice, Doctor Sigler has not neglected civic affairs and political activity. During the 1914-15 outbreak of foot-and-mouth disease he served as one of a state board of three to appraise the animals destroyed. For many years he has functioned as a judge at horse and cattle shows and at county fairs over much of both Indiana and Illinois. He has served his party many years as County Chairman. A favorite campaigner, he has been in demand for, and has made political speeches over the length and breadth of his state in most of the recent political campaigns. He has eschewed every public office, either appointive or elective, save one, that of the board of managers of the local hospital. He has served on the board (now chairman) for 12 years.

When in August, 1926, the A. V. M. A. met at Lexington, Ky., Sigler was the logical choice for president, and was given the highest honor at its disposal by the veterinary profession of America. His interest in the national association and in veterinary organization in general did not abate after his term as president. He has continued a regular attendant at the national and many state meetings and has served the A. V. M. A. continuously since 1927 as its official representative in the Horse and Mule Association of America.

As a guest speaker on state veterinary association programs and as a surgeon in their clinics he has far more invitations than he can accept. His wearing qualities are indicated by his having attended as many as five consecutive meetings of a state association in this capacity.

■ One of the doctor's aphorisms is: "Any man who is not afraid of a bull—of all bulls—is just a plain fool. Bulls are the most dangerous of all animals, domestic or feral, in North America." Then he went on to say that like some men they do not grow old kindly. The problem in men is to keep the head with its accumulated wisdom from growing old. The problem in bulls is to keep that useful, grand producing sire at the head of the herd long after he has become dangerous, instead of turning him into bologna just about the time it is discovered that he is a great producer. That has been the fate of some of the great producing sires.

The animal shown in Fig. 6, for example, looks innocent enough, yet he is a killer—has killed three men. He has been one of the best sires of milk-producing animals ever owned by his present owner. There was no need of anyone being hurt by him, since his bad disposition is well known. The herdsman and attendant need never enter his paddock, which is built of small railroad iron. A breeding stock is built at the side, where a gate swings open after the cow is put in the stocks. Everyone had been warned not to go inside his paddock; still over a period of years three caretakers did enter it, not once but many times, and in each case once too often.

Any farmer can build a bull lot just as substantial out of strong timbers, fixed up in the same manner as this one, and there is no need of loss of human life or the destruction of a valuable sire because he becomes vicious.

A gentle bull or boar is more liable to injure his handlers than a bad one. Like the unloaded gun, such an animal is not to be trusted.

"A few years ago," said Doctor Sigler, "I went into a barnyard to operate on a cryptorchid. There was a big, gentle shorthorn bull in the lot, and also a rope swing hanging from a walnut tree, where a little girl was accustomed to play every day. I asked the owner to put his bull in the barn, as something unusual was going to take place there. The owner laughed at me—made fun of me, 'a veterinarian, afraid of a bull.' He pointed to the swing. He knew his bull—he said. Although I had known a thousand bulls, I let him have his way. The horse was led out, the hopples placed and the animal cast. I lost all interest save for my work. Suddenly someone yelled, 'Look out!' just as I was raised and thrown about ten feet in the air, lighting on all fours and running. Luckily the bull forgot me and almost butted the horse out of the harness. Finally, with the aid of a dog and some pitchforks, the bull was driven off. It was several days before I recovered from the shock. Since that incident, no bull has been a spectator

at my operations—unless he was the patient.

"The little swing was removed from the bull lot. Probably that saved a life.

"On an earlier occasion I fared better and the owner worse. I was preparing to vaccinate some hogs and noticed a young bull in the same lot with the pigs. I requested that he be shut up in the barn, only to be told that this particular bull was 'as gentle as a lamb. Absolutely just like a kitten.' I gave in and nothing happened. But the following Saturday that man went to the hospital for a three-week stay to recuperate from an unprovoked mauling that lamb of a bull had given him. Some bulls are as gentle as a kitten—a kitten with hydrophobia."

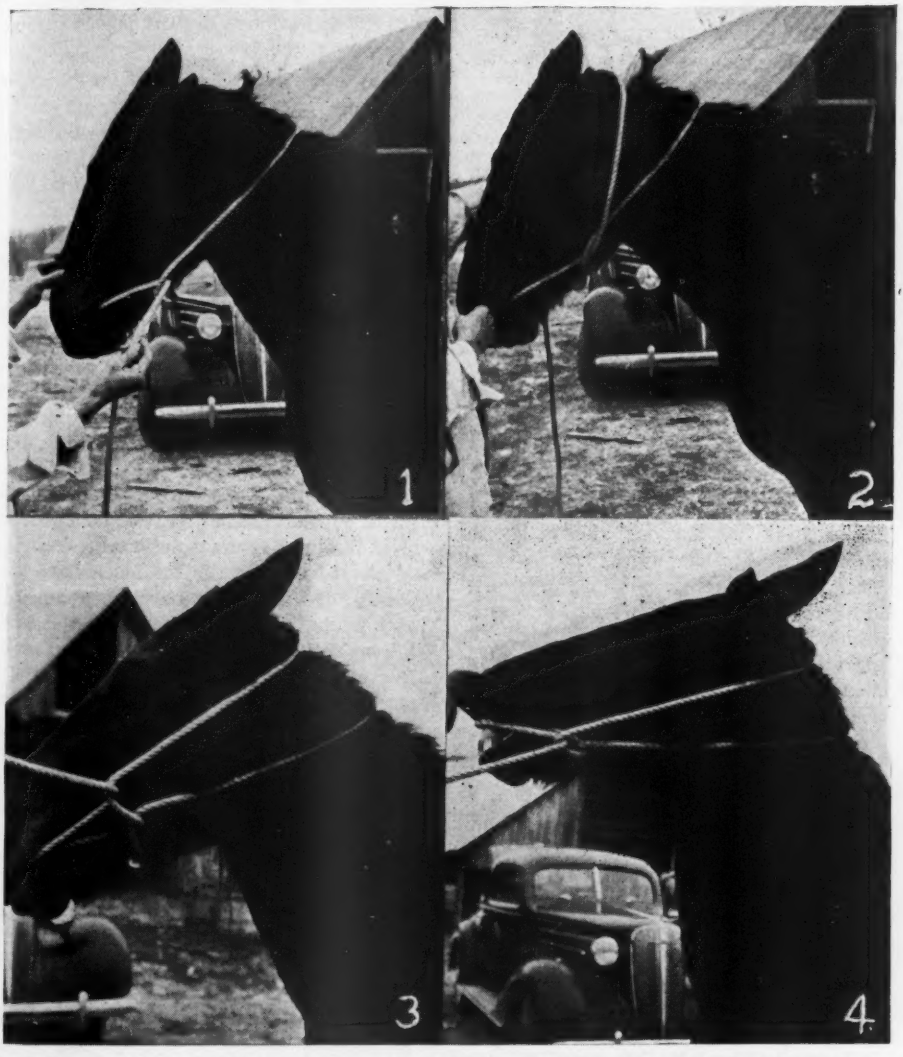


Fig. 7. A war bridle. 1. Standing on the near side of the horse, the lariat is looped about the neck, then brought through the mouth from the off side and taken back through the loop that encircles the neck. 2. Pass the rope up over the head. 3. Bring the rope down and through the mouth a second time and then through the loop that passes over the head. 4. Adjust the second loop that passes through the mouth, between the upper lip and the teeth and pull up snugly

Restraint

Restraint is an important technical factor in veterinary practice, and Doctor Sigler pays a good deal of attention to the proper methods of restraint for his operations. He had occasion to use several different types of restraint on the round of practice on which the writer accompanied him. Several pictures of them were obtained as he discussed their merits and their disadvantages. He obligingly demonstrated some which he did not have occasion to use that day.

According to Doctor Sigler, the horse is the animal that is most frequently submitted to operations, and perhaps the one which requires the most skill and tact in securing for operating. In addition to a couple of good twitches he suggests that one doing much large animal practice should carry one or two good lariat ropes and a strong rope halter. One lariat can be used to snub unbroken animals and the other to make a war bridle.

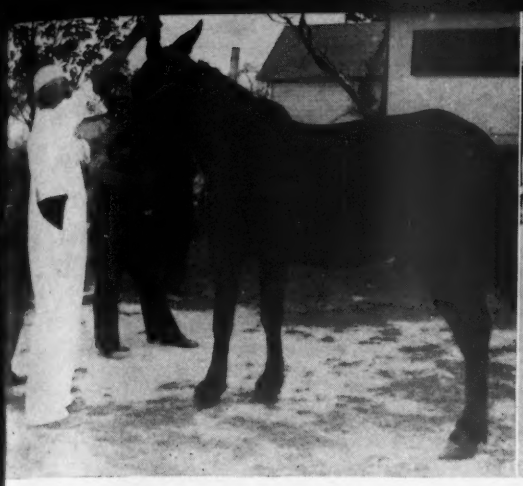
For a handy method of restraint, easily applied, purchase a small awning pulley at any five-and-ten-cent store. Then get about six or seven feet of small sash cord; a soft cord is preferable, since it holds more easily. The rope is put through the pulley and slipped beneath the upper lip above the teeth. A steady, gentle pull on the cord will do about all that a twitch will do and the animal will fight it less. Doctor Sigler has restrained horses this way that would not allow him even to put a twitch on their noses. It is handier and more quickly applied than a war bridle (Fig. 7).

Restraint is a necessary adjunct to practically all animal surgery. Except in the most minor operations on docile animals some form of restraint is essential for the safety of helpers, the surgeon and the patient, and most of all to facilitate skilful, expeditious operations with the least possible traumatism to the invaded tissues and the surest attainment of the objective of the operation.

The restraint used should be in keeping with the requirement. It may be very simple and designed only to divert the attention of the patient, as a twitch or holding up one front foot, or may extend to profound anesthesia. Whatever is necessary should be employed as a part of the operation and not forced by circumstances after the operation has been begun. If one begins the operation on a standing animal and later has to throw it, the owner must conclude that he is paying for experimental surgery. Even to cease paring out a foot to hunt up and apply a twitch conveys the impression that the surgeon is not sufficiently familiar with the operation to see all the way through it beforehand.

The veterinarian's skill or lack of it in applying restraint profoundly affects his reputation. Failure in the manipulation of a surgical instrument is nowhere near as obvious to the owner as awkwardness or uncertainty in restraining the animal. Conversely, our clients are most favorably impressed by deft and sure handling of an obstreperous animal. The public's judgment in this matter is justified. Rarely indeed does a veterinarian handle his instruments any more skilfully than he handles his restraining apparatus—or any less awkwardly. And here let it be said that releasing the animal is just as important as confining it. In casting, for example, the harness should be of a type and the tying of a nature that it can be removed easily. It evidences a lack of skill when, after castration, a colt must be chased around the lot to retrieve some portion of the casting harness. If anything goes wrong after that operation, the owner will unhesitatingly blame the veterinarian. If everything goes well he will credit it to his good luck and not to the skill of the operator, in which he has lost confidence because of the fiasco in removing the casting harness. No veterinarian conducts his practice in order to impress his clients; on the other hand, it is fatal to give a bad impression, since it deprives one of the opportunity of practicing his profession at all.

There are various methods of casting a horse. Each method has its advocates. Certain methods possess special advantages for particular operations. The casting harness may be simply a 40-foot lariat, or a complicated equipment of rope, leather, chains, buckles, snaps, rings and locks. Whatever is used, it is essential that it be strong enough and that the veterinarian be proficient in its use.



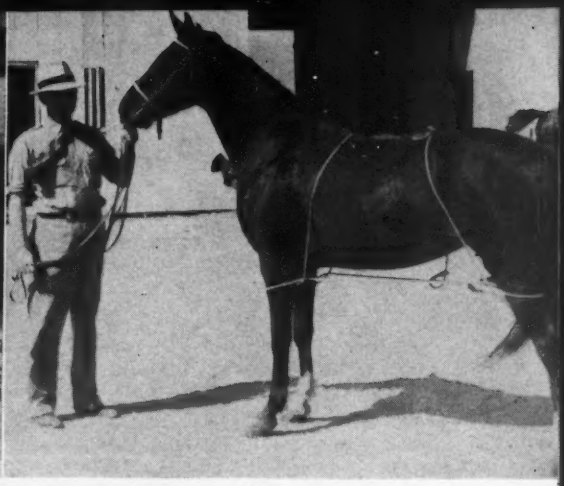


Fig. 8 (left). This mule was difficult to handle and fought the twitch. As soon as he was blinded by the hood he stood quietly and permitted an intravenous injection of chloral hydrate without moving. The chloral solution is being poured into a rubber tube connected to a needle inserted into the jugular and not into the animal's ear, as appears in the photograph. Later, when the mule goes down and is operated upon, the hood will protect the eyes from dirt and the head from abrasions

Fig. 9 (right). A long rope is doubled at the middle, is placed over the withers, the ends taken down over the sides of the chest, between the forelegs, around each, back under the rope on the side of the chest, on back between the hind legs, around the legs and under the sideline at the flank, and on up to the loin, where the two ends meet and are tied together. For safety the rope should be drawn tighter than here shown, pulling the hind legs forward until they are well under the animal

"The good surgeon takes every possible precaution to prevent injury to an animal when casting it. When I started practice I was warned by instructors and preceptors of the dangers of injury through casting and restraint. In two-score years of extensive surgical practice, I have never crippled a horse. I've been lucky, of course, but I used a lot of precaution also — maybe that accounts for the luck. Hundreds, possibly thousands of times I've given chloral before casting aged animals. Perhaps in the great majority of cases it was unnecessary. Possibly it avoided a few broken backs. If so, it was worth while.

"We should not put off casting an animal where it is advantageous to cast it any more than we should delay an operation that our judgment tells us should be performed. Last resorts are poor risks. The only kind of surgical reputation a veterinarian can build on last resort chances is a poor one."

A good operating hood to cover the eyes is as essential in a standing operation as in the recumbent. The operating hood is to be used with a touchy or mean animal. It is particularly useful for mules. Blinded by a hood they can be led where they would refuse to go if they could see. The mule shown in Fig. 8 would very likely object to the intravenous injection if he could see.

When applying a twitch, the operator must guard against being struck or pawed with the forelimbs, especially by unbroken animals. He must also guard against kicking in applying any apparatus, for although the animal can strike only forward, it will sometimes kick with a semi-circular movement outward and backward, giving the operator a "cow kick" when he is applying hopples to feet. Tying the animal as shown in Fig. 9 prevents striking and kicking. It is useful for dental work on mean animals, for dressing wounds and for minor operations about the neck and back and for many other purposes.

The best hopple is one with two "D" rings, one in each end. Slip the rope through one side and pitch the hopple between the hind legs, pick it up and slip the rope through the other ring. In that way, one does not have to touch the hind legs.

The kind and means of restraint generally depend not only on the nature of the operation, but also sometimes on the disposition and temperament of the horse, says Doctor Sigler. Whether the operation is to be performed in the standing or recumbent position will depend a great deal on the nature and location of the parts which are to be operated on.

It is necessary to cast a good many ani-

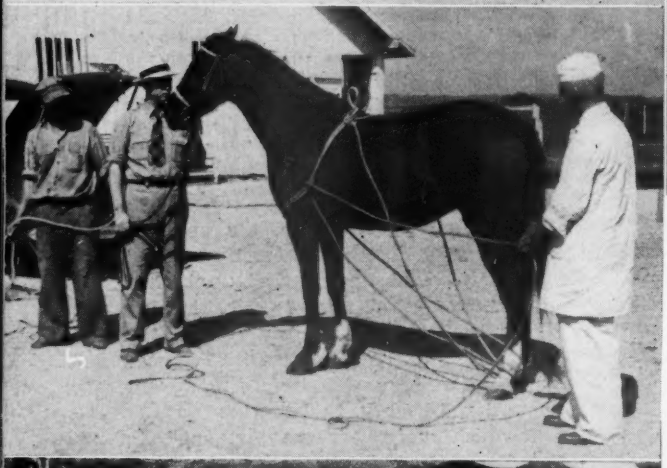


Fig. 10 (top). Simple casting harness using hopples on the hind pasterns

Fig. 11 (center). Casting harness made of a single rope. The rope is doubled at the middle and tied loosely about the neck. The knot placed at the withers and the two ends carried down the side of the horse, around the hind legs, and back through the neck loop

Fig. 12 (bottom). A filly cast and tied with the rope harness shown in Fig. 16

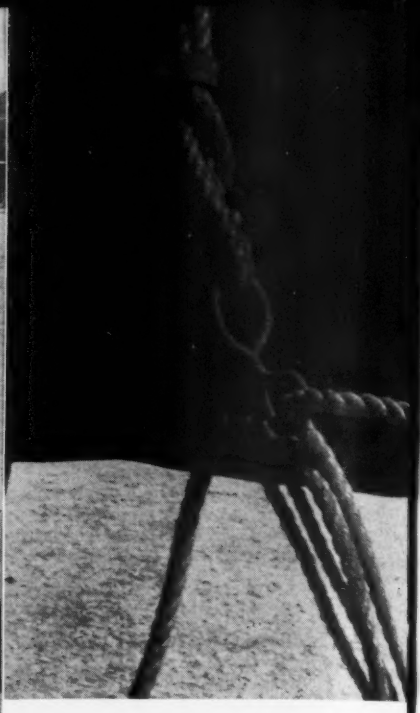


Fig. 13. Close-up of "D-ring" used in the casting harness shown in Fig. 16

mals for operations on the posterior and inferior regions of the abdomen, as for inguinal or scrotal hernia or castration. The simplest method of casting is the use of the old-fashioned neck halter, tied in a loop and put over the neck. The ends are passed back between the forelegs, then around the hind legs and back up through the rope collar. Young mules cast by this method sometimes slip the collar over their heads and bound to their feet. A single rope rein tied in the top of the collar and put around the girth back of the forelegs will prevent this mishap.

In Fig. 11, the rope is doubled, thrown around the neck and tied at the withers, instead of under the neck as in the preceding method, in a bowline to make a breast collar; then the ropes are brought down on either side of the body, around the hind pasterns, and back up through the collar.

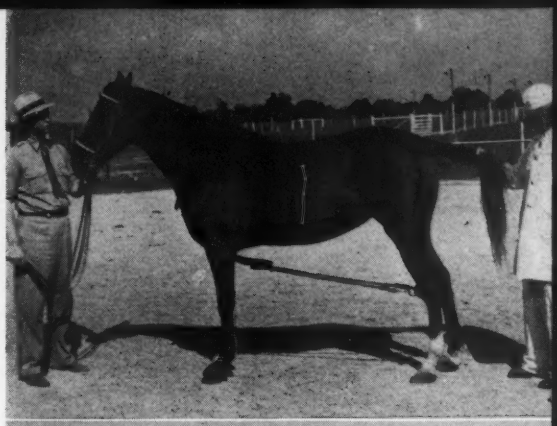


Fig. 14 (top). Breeding hobbles. A leather strap goes around the neck and is adjusted to fit rather snugly; from this a strap about two feet long passes between the forelegs and ends in a large ring. Two short ropes are spliced onto the ring. They have snaps at the free ends which are hooked into double-looped hopples, one loop going above and the other below the hocks. The strap passing between the fore legs is adjustable for horses of different lengths

This is the method which Dr. L. A. Merillat described in VETERINARY MEDICINE in March, 1922. It has been used for years before that, but according to Doctor Sigler, it is still one of the best all-rope throwing harnesses he has ever used.

Another handy rope method, a little cumbersome to apply, goes to all four feet. This can be made all rope. The set shown in Fig. 16 has an adjustable breast strap, but a breast rope will do just as well and is stronger; it can be looped around one side and tied in a bow knot on the other. The ropes that go around the front feet have metal eyelets. Hopples or just the plain rope can be used around the hind feet. The good feature of this throwing apparatus is that when the animal hits the ground and the operator pulls the rope up tight to make the half hitches or figure-of-eight around the hocks, the front feet are drawn up out of the way. Fig. 16 illustrates how the rope is tied. Fig. 13 shows the way the iron ring on the side is made and how the rope is put through it.

In Fig. 10 is shown a leather harness, breast strap and adjustable back strap, with a rope belly band. The side ropes have a metal lined loop and are wrapped through the harness ring to make a pulley to carry the rope, with pulley and snap for the hopples. This is a good harness for castrating colts—quickly applied and released. A lock pulley may be added to this, instead of the ring.

Another hopple which Doctor Sigler uses rather frequently is a chain hopple with lock buckles around the pastern and a lock buckle in between which, when the feet are drawn together, locks and holds them without tying. This is similar to the Conkey pattern of English hopple, i. e., it works on the same principle (Fig. 21). When an animal is dropped with a light dose of chloral, as when the operator wishes to keep it under

Fig. 15 (center). Doctor Sigler examines a mare (in breeding hobbles) before bringing up the stallion

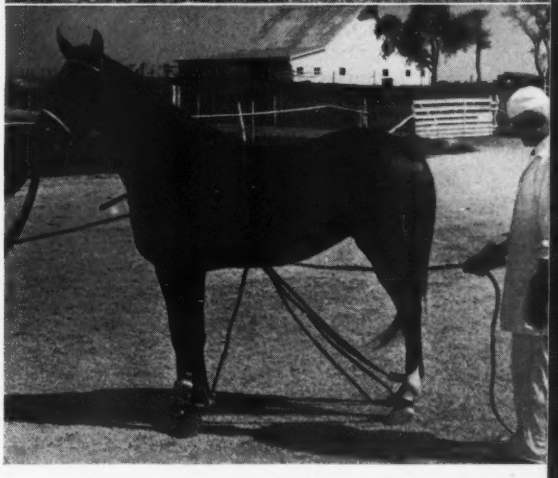
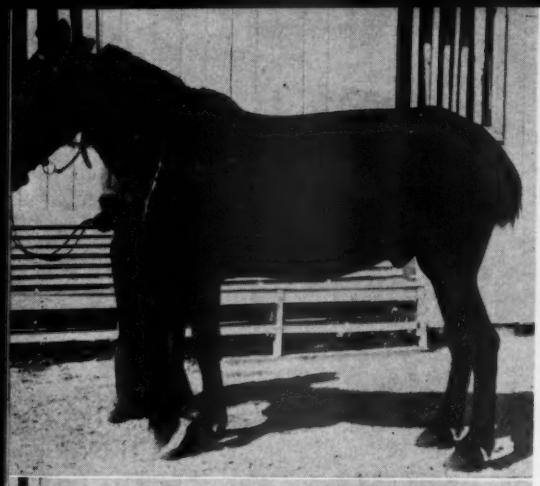


Fig. 16 (bottom). A different type of rope casting harness. Hopples are used on all four pasterns and when the animal is thrown all four feet are drawn to the twisted rope that passes over the back. A strap passing in front of the breast prevents it from slipping too far back



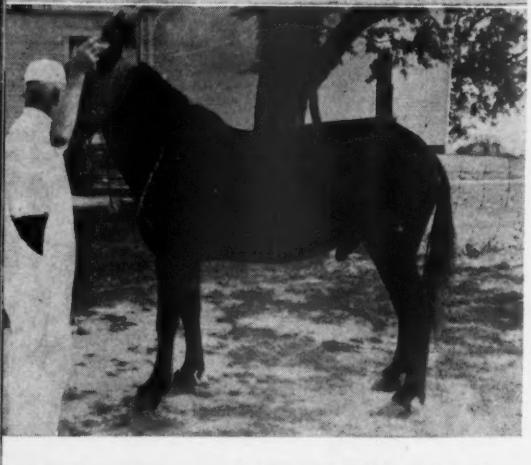


Fig. 17 (top). Four-year-old mule with fistula of the withers, showing swelling and copious discharge on the left side

Fig. 18 (center). Same, showing swelling and effect of blistering on the right side

Fig. 19 (bottom). The patient is hooded and given an intravenous injection—1000cc of distilled water in which two ounces of chloral hydrate had been dissolved. This solution is prepared in advance and carried in sterile, 500cc serum bottles

only a few minutes, these hopples can be applied to keep it from getting up, if it comes out of the anesthesia a little too soon.

The desideratum in casting is to throw the animal quickly, securely, and as safely as possible and to be able to secure it in position for operation whatever method is used. Strong ropes or strong double leather back or breast straps should be used for safety, to both animals and operator.

Nearly as much care is necessary in releasing the animal as in throwing and securing it. The good casting apparatus provides for this. Removing it is as important as applying it. All ropes and straps should be of a nature which can be quickly released. Accidents are possible incidental to throwing horses or to restraining them while they are down. They usually result through neglect of ordinary precautions, sometimes from unforseeable circumstances. Frequently they are due to insufficient or insecure tying of the animal, or too much force is applied to limit its movements. Neglect of precautions to prevent injury from surrounding objects, obstructing respiration through restraining apparatus and casting immediately after feeding or watering, or in an advanced stage of pregnancy all add their quotas to injury due to restraint.

Whatever method of casting is used, one should be familiar with the method chosen, and see that the ropes are well adjusted.

For examining mares before breeding them, for douching the vagina and for all minor operations where the operator must stand behind the animal, the breeding hopples (Figs. 14 and 15) or the lariat rope about the legs (Fig. 9) are useful, but for tail setting or docking, a chute is better.

A chute can be built easily against the side of the barn or a stall with a few planks and a couple of posts. Do not make it too wide and use pieces of plank before and behind the animal to limit forward and backward movement. The animal will not fight this kind of apparatus as much as it will fight straps or hopples about the legs, and it is not nearly so liable to throw itself in a chute or stocks as when tied up. It is safer for both operator and animal, for the operator can sometimes get a pretty hard bump from the hocks that are in hopples.

Fig. 20 (left). The mule goes down, but he is very resistant to the effects of the chloral, and part of a third bottle is required to put him completely under

Fig. 21 (right). The patient is wholly unconscious, but as a precautionary measure all four feet are drawn together with chain hopples having an automatic locking device

Surgical Treatment of Fistulous Withers

Figures 17, 18, 19, 20, 21, 22 and 23 illustrate a case of fistula of the withers in a good four-year-old mule and Doctor Sigler's method of operating upon it, which he describes as follows:

"Shave the entire region of the withers, sterilize the usual operating instruments, and prepare two or three one-yard length sterile gauze packs, powdering these packs with equal parts of boracic acid and chlorinated lime, for packing the wound, or it may be packed with oakum which has been thoroughly dusted in with the boracic acid and chlorinated lime powder. The oakum is a little easier placed than the gauze packs.

"Anesthetize the patient with about two ounces of chloral hydrate crystals dissolved in 1000cc of distilled water. Sometimes it is desirable to give more chloral. It depends upon the size of the animal and its tolerance of chloral. This tolerance varies considerably in different animals. The chloral is administered in the jugular vein with the animal standing as shown in Fig. 19. It is injected slowly until the animal goes down, or has received the entire dose. If then he does not go down in a few minutes, additional chloral is injected. When down, the chain hopples are fastened to his feet, just in case he should revive a little too soon.

"Make the incision on the lateral aspect of the region between the top of the scapula and the crest of the withers. Beginning at a point opposite the third or fourth thoracic spine, about two or two and one-half inches from the median line, continue the incision backward and downward about six or seven inches. The incision should extend through the skin and inflammatory tissue down to the enlarged portion of the ligament. Divide the ligament and remove all that is diseased. After removal of the ligament, search for necrotic spines and remove any that may be present. If any pockets are found that are not drained by the incision, open up wherever necessary. Operate upon the opposite side in the same manner.

"This method is more successful when combined with the drainage under the rhomboid muscle, which will provide drainage below the level of the incisions described in the foregoing.

"To provide adequate drainage, make an incision at the side of the neck, just anterior to the scapula, make a triangular incision through the skin and superficial fascia at a point below the border of the rhomboideus, exposing it, remove a portion of its structure, place the closed point of the scissors under it, and advance them into the distended bursa above. A large seton needle may be used instead of scissors. A knife should be passed into the channel and the muscle should be cut almost in two. Pass a gauze bandage through the tract of the scissors or seton needle for drainage, pack the cavities with the gauze or with oakum (gauze is better than oakum if it is desired to leave some of the stitches in position after the packing is removed and thus avoid a widely gaping wound).

"The packing should be removed from the wound in not less than 24 nor more than 36

Fig. 23 (center). The fibrous tissue is excised in large pieces as rapidly as possible, to lessen the hemorrhage. No muscle or normal tissue is removed. Skin is invaded with the knife. The opening for the discharge (low on the left shoulder) is somewhat enlarged and a loop of bandage passed through it, the wound lightly packed with gauze and the skin sutured. The mule was on his feet in an hour, and sound and well, with little scarring, in 60 days

Fig. 24 (bottom). Sometimes one's patients are champions. This shorthorn cow was a blue ribbon winner at the state fair three weeks earlier

Fig. 22 (top). The operation proceeds. Since the inflammatory condition has existed for several months, there is a large amount of fibrous tissue and some diseased ligament requiring removal

hours. Iodoform, bismuth subnitrate, and mineral oil should be used for dressing the wound until it stops discharging, and then any good dusting powder is satisfactory. The aftertreatment of wounds resulting from the fistula operation should not include irrigation. They should be cleaned by dry mopping and after the first fortnight only dry dressings should be used. While the discharge is abundant oily dressings may be employed. At no time are alcoholic or watery solutions advisable.

"The foregoing operation is for cases that are badly enlarged, where there is much diseased tissue and many enlarged ligaments. If the operation is carried out properly, such cases will recover in less time than they will after a more radical operation or any other treatment."

Tail Operations

For tail work (docking and tail setting), Doctor Sigler uses the instruments shown in Fig. 25. He performs both operations in the standing position, with the use of local anesthesia.

A twitch is applied and a hood placed over the animal's eyes. Stocks are preferably used for restraint; if they are not available, breeding hobbles (Fig. 14) or the rope restraint shown in Fig. 9 may be used. After the restraint is applied, the seat of operation is thoroughly cleansed and anesthetized. A good antiseptic for tail work is Quitman's solution (acetone, alcohol and lysol) or iodine used a couple of times after cleansing with bichloride solution. Any good local anesthetic will do; a combination of dulcin and epinephrine works well and is lasting, or a 2% solution of procaine may be used, or butyn and epinephrine.

For the docking operation, the tail is sheared with the pair of heavy corrugated scissors, the hair is clipped at the point of the proposed incision, and the antiseptic applied. The anesthetic is injected deep into the muscles around the tail, at the line of incision. After a few minutes, a tourniquet is applied above the site of amputation.

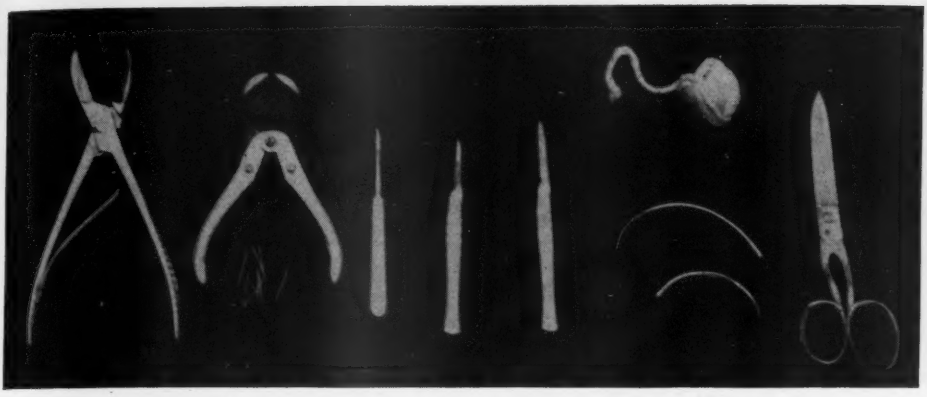


Fig. 25. Instruments used in tail-setting and docking. Left to right: (1) Bone forceps. This instrument is not often needed, since usually there is little difficulty in disarticulating the tail; however, if the incision fails to strike a joint, a pair of heavy, dependable bone forceps is necessary to cut through the caudal vertebra. (2) Pins for sutures and pin cutter for clipping off the protruding ends of the pins after the sutures are in place. (3) Small nicking knife used by most operators. (4) The next two knives are Meade abscess knives with blades ground to even width. These are preferable to the ordinary nicking knife, as they readily cut through all the caudal muscles on one side at a single stroke. (5) Curved needles for suturing the skin. These are large, hand-forged, very strong needles. They must be honed for each operation until they are very sharp, so sharp they will penetrate easily the tough hide of the tail. (6) The suture material is what is known as heavy parcel post twine. It is strong and soft. Knots in it hold securely, and being large and very soft it does not cut through the tissues. (7) A pair of heavy shears with serrated edges for trimming the coarse hair from the site of operation.

Heavy twine like that illustrated is used; it is soft, draws up tightly, and may be left on for one and a half to two hours.

The incision is made with the larger scalpel. It is started on the tail, dorsally, from the center. The blade is inserted deep into the muscle and the incision made from above, backward, downward, and forward on the venter surface, making a semi-circular flap. The incision is then duplicated on the other side of the tail, cutting to the bone all around and when the tail is removed leaving a semi-circular flap on each side at the end of the stump. A heavier scalpel is used to unjoint the tail; if it does not unjoint easily, the heavy bone-cutter is used. The incision is sutured with three or four heavy linen sutures. For suturing, the heavy needles are honed very sharp so that they will penetrate the tough skin of the tail. The sutures are removed in five days.

If horses are docked in this manner, the hair grows almost to the ground when the animal is not in show, so that the animal can use it for a fly switch.

For tailsetting, the animal is restrained and the antiseptic applied. The tail is raised high over the back by an assistant, but not stretched too tightly until after the injection is made, as there may be some difficulty in forcing the anesthetic solution into the muscular tissue. After the injection is made, the assistant releases the tail and about 10 or 15 minutes is allowed for the anesthetic to take effect.

The operator now stands directly behind the horse, inserts the knife (Doctor Sigler uses a small nicking knife and Meade's abscess knife from which the point has been rounded off and the heel cut down, giving the blade the same width throughout its length) through the skin on the lower surface of the tail, about one inch from the body and just slightly to the left of the median line, to avoid severing the middle coccygeal artery. The point is then advanced to the vertebrae, with the tail flexed so as to extend the muscle being divided, the cutting edge is turned toward the muscle which is then completely sectioned, care being taken not to cut through the skin. The knife is withdrawn and inserted in the other side in the same way, dividing the opposite muscle. Pins inserted through the knife

Fig. 26. A close-up of the hopples used by Doctor Sigler for work on the tail. The complete harness is shown in Fig. 14

wound and wrapped with linen suture thread in a figure-of-eight help to control hemorrhage. The tail is bandaged with heavy cotton dressing. This may be applied at first to an ordinary harness crupper, wrapped heavily and padded. Some prefer to use the tailset apparatus from the start, but Doctor Sigler does not put the tail in the cradle until all bleeding has stopped.

The operation for correction of curvature of the tail is performed with the same restraint as in docking and tailsetting. The point of puncture is thoroughly prepared and the coccygeal nerve of that region blocked. In case of lateral curvature of the tail, the muscle or muscles affected are indicated by the location of the curvature. Usually the lateral coccygeus muscle is the one chiefly involved, although the dorsal or ventral may be at fault also. Sometimes the curvature exists at more than one point. The point having been determined and the curvature studied by moving the animal, the point of incision and the muscles in that region are thoroughly anesthetized. Then a sharp-pointed nicking knife, or tenotome, is inserted, with the knife turned flat and parallel to the long axis of the muscle until it advances to the vertebrae, when the cutting edge is turned toward the muscle to be severed, and the entire muscle separated down to the skin. The operator knows when he has divided the muscle by the relaxation which takes place. He is also able to palpate the knife as it underlies the skin and fascia. The skin is divided only at the original puncture. The muscle is cut until the tail has as much faulty carriage as it had originally, but in the opposite direction. If this is not obtainable at first, the dorsal and ventral muscles are sectioned also. When the correction has been made, a mild antiseptic pack and bandage are applied. The bandage takes the place of a tourniquet in controlling hemorrhage. A tight bandage should not be allowed to remain on too long.

In some cases, a faulty carriage may be due to a weakness of the muscles on both sides; the tail hangs on one side and then on the other. In these cases, it is best to cut both sides as in tailsetting. In a few cases of extremely long tail bones and sorry carriage Doctor Sigler has amputated some of the distal coccyges.

He quoted Merillat as saying: "You can sever caudal muscles, but you can't change a horse's mind in doing so. In other words, ginger sometimes does more than the knife." Some horses are hard to correct and it is necessary to use a tailset most of the time.

Roaring Operation

The operation for the relief of roaring can be performed in both the standing and the recumbent position. Doctor Sigler prefers the recumbent. It is safe to inject into the jugular vein enough chloral hydrate solution to drop the animal. If the seat of the operation is locally anesthetized at the time of tubing and sufficient solution is used to put the animal off its feet, it goes down quietly, if not completely out. The legs are then fastened with a set of chain hopples, as in Fig. 21. With this apparatus, the animal need not be put completely out, and it is up in a few minutes after the operation.

The instruments shown in Fig. 27 are used. The Robinson castrating knife, kept very sharp, is used to make the incision. For the recumbent operation, Doctor Sigler uses an adaptation of the Adams spreader, which he made a few years ago, larger and heavier than the original. An instrument of his own design is used to spray the ventricle with butyn or cocaine, when the animal is not completely anesthetized. A short curved forceps that works over the burr is very fine in the standing position. Whatever forceps is used, it must be of a

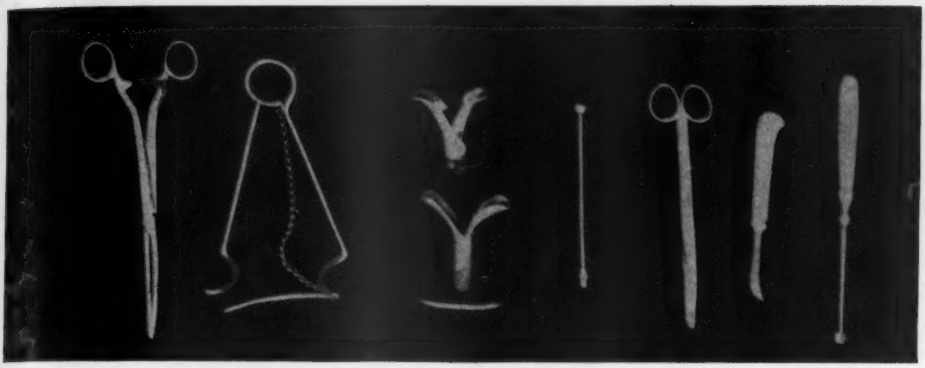


Fig. 27. Instruments used in operation for roaring. Lef to right: (1) Modified Blattenburg burr. The burr should be medium sharp; only sharp enough to catch the mucous membrane of the ventricle readily and after twisting to lift it when the shank is used as a lever. (2) Robinson knife. It must be very sharp. The one shown is hooked just right for cutting through the skin and the thyroidean ligament easily in the tricle after it has been grasped with the forceps. (4 good quality for trimming out the lining of the venthe mucous membrane of the inside of the larynx wit) Spray nozzle for a hypodermic syringe, used to spray this purpose. (5) Two sizes of trachea tubes. It is imh anesthetic. Butyn is the anesthetic of choice for the surface of the throat into the trachea without comportant that the tube be long enough to reach from hose arranged as described in the text is preferable tpressing the tissues. In some respects a piece of rubber essential, but it is sometimes a convenience. (7) Plaino any metal tube. (6) Spreaders. This instrument is not forceps should never slip. The instrument used for th, long dressing forceps. It is most essential that the standing operation. (3) Plain, long, curved scissors ofis operation should never be used for any other purpose, but should be kept in perfect condition for grasping securely the mucous membrane when it is lifted by the burr.

kind that will not slip, but will retain the membrane once it is grasped. The burr must be of a type that will not be too harsh and tear the membrane, yet will entangle and hold it securely, until the forceps is locked into it.

The trachea tube should not be too large, or it will injure the cartilage. It should be long enough in the shank not to press upon the wound too much. Doctor Sigler likes Dr. W. L. Gates' method; he pierces a piece of rubber hose of suitable length with an ice pick, and puts a piece of wire through each side, making a ring. A strong string is tied into each ring and the strings connected with a rubber band around the neck, so when the horse moves its head up and down, the trachea tube will not work out. Recently, he has adopted the method of fastening the wire rings to the rubber hose with strong adhesive tape. A tube of this kind works well, is easily made, and can be thrown away after use, a new one being made for each case.

The operation should be performed in mature horses whenever possible; however, Doctor Sigler has operated successfully on some very young roarers, e. g., on a weanling colt at a veterinary clinic a few years ago.

In performing the operation, care should be taken not to injure the larynx in lifting the membrane. When the condition is complicated by chondritis of long standing, the cartilage involved is increased in size and rigidity. Such cases can be diagnosed usually by palpating the larynx in additon to exercising the animal.

After the larynx has been opened, the burr should be introduced to the bottom of the ventricle and twisted until it entangles the membrane. Then it should be lifted gently with a prizing motion over the side of the wound, as it will not tear out easily in this way as from pulling straight up. As soon as the entangled membrane is lifted sufficiently, it is grasped with the forceps, and removed in its entirety. The membrane should then be straightened out before it is excised. If it is cut off at the mouth of the ventricle while twisted it will leave jagged edges and the stripping will not be complete. The membrane should be worked off to the very edge of the cords.

After the operation, the animal should be kept quiet for about two weeks and should not be put to heavy work for six months.

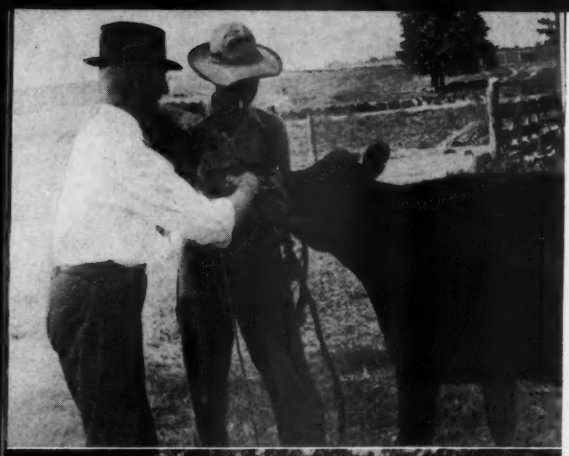


Fig. 28 (left, above). Giving a capsule of chloral hydrate to a cow in an early stage of acetonemia. This treatment, together with a change of feed to include a higher proportion of carbohydrates, is usually all that is required in cases of ketosis caught in the very early stages

Fig. 29 (left, below). Gastritis suspected of being of traumatic origin

Traumatic Gastritis and Pericarditis

Doctor Sigler finds traumatic gastritis and its sequel traumatic pericarditis more frequently in milk cows than in other cattle. This is perhaps due to the fact that these cows are kept around the barn, where they are more likely to pick up foreign bodies. Doctor Sigler believes that many of the objects that find their way into the reticulum are started on their death-dealing journey at the time of parturition, as many of these cases develop then. It is true that many cases are probably overlooked in beef animals running out in the pasture. They pick up rusted and disintegrated bits of wire from woven wire fences along with the rough forage. These are given a lick and a promise with the teeth, then swallowed, gravitate to the reticulum and are not regurgitated.

Forty years ago traumatic pericarditis was less common than at present. Doctor Sigler thinks that this is probably because cows had less opportunity then than now to ingest wire, since many of the pastures had rail fences then. He thinks the present demand for scrap iron may cause a decrease in the frequency with this ailment, since junkmen are now combing the country for old iron. Recently he observed a pile of old wire 40 feet wide, 30 feet wide and 400 feet long in a junkyard in the capital of an adjoining state.

The first case of traumatic pericarditis he ever treated was in a family milk cow. It ended in a necropsy, at which an old-fashioned, round-headed hatpin about seven inches long was found. Upon seeing it the farm wife recalled throwing away an old straw hat and seeing the cow eat it immediately. She was very sure it was her hatpin and that it was in the hat when it was thrown away.

On another occasion, also many years ago, he was called to treat an animal that had that morning swallowed her owner's open pocketknife. Through a rumenotomy the knife was retrieved from the reticulum and handed to the owner, who wiped it a couple of times on his overalls, closed it, and put it in his pocket, remarking that he was glad to get it back, since it was a good knife. The cow showed as little concern for the operation as the owner.

It is frequently asked whether cattle eat wire and nails accidentally or by design. In Doctor Sigler's opinion, in the majority of cases it is accidental. However, animals suffering from certain diseases, such as osteomalacia or what used to be called puerperal mania (the nervous form of acetonemia) may deliberately chew or lick foreign substances and ingest nails and other foreign bodies in that way.

Doctor Sigler believes that many cases of other diseases that do not respond to the regular treatment have possibly picked up foreign bodies, and that this may foil the treatment of the primary cause and result fatally. It has been pointed out that some,

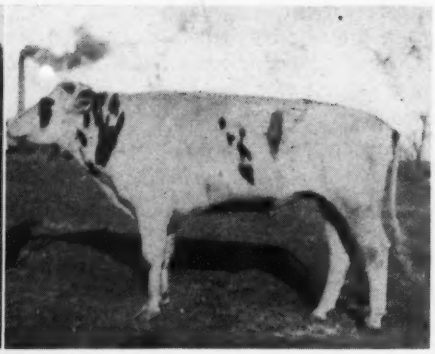


Fig. 30 (left). Far advanced case of traumatic pericarditis. Note the poor condition and the edema at the sternum. Such cases are hopeless and should not be operated upon. The hide and carcass should be salvaged immediately if there is a rendering plant or other facilities for the purpose near at hand

Fig. 31 (right). This case occurred on the same farm and was seen at the same time as the cow shown in Fig. 30. However, the bull was a recent case and vigorous. He was operated upon (rumenotomy) and made a good recovery. This photograph was taken six weeks after the operation

perhaps many, of the cases of milk fever that do not respond to treatment may be suffering also from fracture of the pelvis or other conditions. Because of the routine nature of the treatment for milk fever, complications of this condition are very apt to be overlooked, sometimes until too late, and the same applies to indigestion.

The nervous type of acetonemia (puerperal mania) is particularly likely to be complicated by the ingestion of foreign bodies. The animals may try to eat anything with which they come in contact. Ordinary cases of acetonemia yield to dextrose intravenously and molasses *per os*, with chloral hydrate in one-ounce doses daily. If these cases do not respond to the ordinary treatment and have continued for some time, showing continued digestive disturbance, rumenotomy frequently discloses in the reticulum sand and other foreign material. Such objects may not penetrate the wall of the reticulum, but they may produce a chronic gastric trouble and interfere seriously with the function of the digestive tract.

It used to be the tendency, many years ago, for the human surgeon to put off removing an appendix until it was the last resort. Doctor Sigler thinks that this same policy is too prevalent among veterinary surgeons. When any operation is performed as a last resort, the animal is usually a poor risk. When traumatic gastritis is allowed to progress to the stage where the clinical picture is one of traumatic pericarditis, with dropsical swelling between the fore legs and under jaw, it is useless to expect good results from surgery. Success is attained only by early diagnosis and early relief.

Most cases of traumatic gastritis have a sudden onset. The owner reports a sudden loss of appetite and diminished milk secretion. A cow that gives a good flow at night may give almost nothing in the morning. This sudden and almost complete drying up of the milk flow is one of the suggestive symptoms of traumatic gastritis. Marked depression, associated with an expiratory grunt, pain, and a tendency to stand rigidly, walking being stiff and slow, and trembling in the region of the elbow—these are symptoms of great diagnostic value. The animal stands with the elbows well turned out. There seems to be a soreness of the intercostal muscle. Pressure upward on the sternum causes pain, as does pressing down upon the dorsal spine. The pulse, respiration, temperature, all increase. Atony of the rumen, suppressed peristalsis, and constipation are all marked. If treated for indigestion, the animal may improve for a few days, only to relapse into the same condition. Traumatic gastritis is somtimes mistaken for indigestion, but the distinction between the two is clear when the history is considered. In most cases, the history does

not reveal a diet sufficiently faulty to explain the severity of the disease. The onset is usually sudden, occurring in an animal on a regular diet.

Rumenotomy for the Removal of Foreign Bodies

Since the method introduced by Bardwell and Udall has made the operation a clean one by preventing the soiling of tissues, Doctor Sigler, like others, prefers the standing position for rumenotomy, if the animal is not too weak or too toxic. The field of operation is prepared in the usual manner, and from 50 to 75cc of a 2% solution of procaine is injected subcutaneously into the muscles and beneath the skin, or paravertebral lumbar anesthesia may be employed (see *Ved. Med.*, December, 1940, p. 715, for technique).

An incision about six inches long is made in the skin. Sutures of umbilical tape are placed in the walls of the rumen and held by assistants; or the wall of the rumen can be anchored to the side if one has no assistance. Rubber sheeting held by an embroidery hoop is placed in the wound to protect the edges and prevent contamination while the contents of the rumen are being removed. It is well not to remove all the contents, for the rumen if thoroughly emptied will not function properly and this will interfere with the return of appetite; furthermore it causes the animal great distress. If the contents of the rumen are fermenting so actively as to indicate the removal of the whole of it, it may be replaced with two or three gallons of chops mixed with an equal amount of water.

The search for foreign bodies is then made. Small wires of the type used to tag grain sacks are often found in the reticulum. Large roofing nails which have fallen into mangers in repairing barns, nails that have dropped on feed room floors, hatpins in old straw hats devoured by cows, and similar objects are often encountered in rumenotomies. After the foreign body has been located and removed, the rumen is sutured with catgut or silk. Next, the peritoneum and muscle are sutured with catgut, and the skin incision is closed with linen sutures.

A posture often assumed by cows suffering from traumatic pericarditis. Presumably the wide-spread forelegs lessen pressure on the chest and makes breathing less painful

A drainage tube may be inserted in the bottom of the wound before tightening and tying. In some cases it is well to put into the rumen a gallon of warm saline solution, aromatic spirits of ammonia or mineral oil with aromatics. Mineral oil and boric acid or mineral oil and iodoform may be flushed through the stomach tube.

It should not be inferred that Doctor Sigler's practice has been limited to the equine species or to large animals. He has been all the while an animal doctor, equally at home with the various species of domestic animals. It is an actual occurrence that he returned from a hundred-mile call to see a $5,000 bull and on that same afternoon caponized 50 cockerels for a farm wife. For a single client, a breeder of Boston terriers (and also a veterinary practitioner), he has performed 23 cesarean sections. Incidentally, the mother and one or more of the pups have been saved in every instance, perhaps because the owner, being a veterinarian, presented the bitches for operation early, when the chances for recovery were still good.

Clinical Observations On the Use of Sulfapyridine In the Treatment of Canine Distemper

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THE sulfonamide group of drugs dominates all other chemotherapeutic agents in recent medical literature, because of their apparently specific action in combating many types of infections. New uses are still being found for these drugs and new derivatives are being prepared in the laboratory with varied therapeutic indications. Sulfapyridine is practically specific in human pneumonias, particularly lobar. Ketchersid[1] used this drug in the treatment of 18 dogs suffering from pneumonia, of which 11 cases were secondary to distemper, with encouraging results. The following clinical investigations were based on the thought that sulfapyridine also might prove of value in the therapy of uncomplicated distemper, or of distemper with complications other than pneumonia.

Clinical Material

Canine distemper cases were accepted for these clinical observations only if the animals showed a temperature of over 103°F., rapid pulse and increased respirations, hyperemic membranes, etc., as evidence of the catarrhal, bronchial, intestinal, or skin forms of distemper.

One control group consisted of dogs given ordinary supportive treatment such as might be attempted by the laity. A second control group was given anti-canine distemper homologous serum only. A third group received sulfapyridine *per os* in minimum therapeutic doses, and a fourth both homologous serum and sulfapyridine. Included among the controls were untreated or lay-treated animals suffering from the disease, owned by the neighbors of persons whose dogs were given the course of sulfapyridine treatment. A cocker spaniel kennel of some 150 dogs in which distemper was present gave an excellent opportunity for close clinical observation of treated animals and untreated controls. Some sporting breed kennels with beagles, pointers, and setters were also included in this experiment. In our own hospital, typical cases were brought in for daily observations.

Dosage of Sulfapyridine

We experimented with the dosage, endeavoring to find the smallest effective daily dose which might be given with beneficial results. This was considered important both because of the relatively high cost of the drug and because of the possibility of toxic effects from larger doses. It is known that to be effective a definite concentration of the drug in the blood stream must be maintained throughout its administration, and to effect this it should be given every four to six hours, preferably on an empty stomach. The human dose is generally estimated as 0.5 to 1gm (8 to 16gr) every four hours, the maximum single dose being 2gm and the maximum daily dose 6gm.[2] Ketchersid[1] found a dose of one grain per pound of body weight per day effective for dogs. For large dogs, such as shepherds, St. Bernards, collies, great Danes, etc., we gave an initial dose of 10gr either four or six times a day, depending upon the size, without toxic symptoms except occasional emesis and transient anemia in protracted cases. In medium sized dogs, such as chows, spitz, setters and pointers, the initial dose was 7½gr four to six times a day. The small breeds, such as scotties, beagles, etc., received 5gr, and the toy pomeranians 2½ to 4gr, six times a day.

In practically all instances of acute in-

[1] Ketchersid, James R., 1940. Clinical studies of sulfapyridine in small animal practice. *J.A.V.M.A.* 96:758, pp. 661-662.

[2] Perrin H. Long suggests a six-hour schedule since owing to its lesser solubility the absorption rate of sulfapyridine is slower than for sulfanilamide, for which drug the foregoing schedule was first worked out.

fections, the temperature fell to normal after two days, after which the doses were tapered off gradually and were stopped by the fifth day, if the temperature and pulse were still normal, and the dog active and lively. Extreme minimum dosages which were found to be therapeutically effective in distemper were 7½gr three times a day, with the first dose at about 6 a m. and the last dose at midnight; or 5gr four times a day, for medium and large sized dogs, for 48 hours.

Clinical Records

1. Boston terrier, Sept. 26-30, 1940. Age 1 year; temperature 103.8°F.; in 3 days, temperature 99°F., pulse, respiration and appetite normal; complete recovery. Serum and sulfapyridine therapy used.

2. Boston terrier, Sept. 27-30. Age 6 months, temperature 102.5°F.; normal in 3 days, temperature 100°F., slight conjunctivitis. Sulfapyridine only.

3. Three beagles, Sept. 28-30. Age 4 months, temperatures 103.8°F. to 104.5°F. All three completely recovered in three days, temperatures 99° to 100°F. Used serum and sulfapyridine therapy. One untreated control, a littermate of the other three, died of dysentery, emaciation and anemia after an illness of three weeks.

4. Belgian shepherd bitch, Sept. 30-Oct. 2. Age 7 months. Temperature 104.5°F.; bronchopneumonia. After three days complete recovery, temperature 99.6°F., no untoward sequelae. Serum and sulfapyridine therapy.

5. Chesapeake Bay retriever, male, Sept. 26-29. Age 5 months. Temperature 103.5°F.; skin and catarrhal distemper. In 3 days temperature was 100°F., with slight dysentery and conjunctivitis; recovered in 5 days. Sulfapyridine only.

6. Seven cocker spaniels, age 5 to 8 months. Temperatures 103° to 104.6°F.; four had catarrhal distemper, one mainly skin lesions, and two dysentery. Four were given serum and sulfapyridine, three sulfapyridine only. All improved within 3 days, but the dysentery case took 4 days for recovery. Three untreated control cases in the same kennel developed chorea or hemorrhagic dysentery, became dehydrated, and died or were destroyed.

7. Chow, Sept. 9-13. Age 1 year; temperature 104.1°F.; distemper complicated with otitis media. Recovered in 3 days, temperature 99.5°F. Serum and sulfapyridine were given.

8. Scottie, Sept. 4-8. Age 9 months; temperature 104°F.; bronchial and skin distemper, conjunctivitis, pharyngitis, and laryngitis. Recovered in 4 days after being given altogether 52gr of sulfapyridine. The dog vomited twice.

9. Two beagles, Sept. 2-5. Littermates. Age 5 months; catarrhal distemper. One treated with sulfapyridine and serum, the other with sulfapyridine only. The latter developed fits and was then treated hypodermically with 5gr soluble barbiturate. Recovered in 4 days. A control beagle in a next door kennel, receiving serum only was ill 3 weeks; became emaciated and recovered slowly.

10. Wire-haired fox terrier, Aug. 21-25. Age 18 months; catarrhal distemper followed by intestinal form of the disease was treated with serum and sulfapyridine; recovered in 4 days.

11. Pomeranian, Aug. 21-23. Age 1 year; temperature 104.3°F.; pharyngitis, bronchopneumonia. Serum and sulfapyridine administered; recovered in 2 days.

12. Mongrel, Sept. 17-19. Temperature 104°F.; catarrhal distemper, extreme malaise. Complete recovery in 2 days. Sulfapyridine and serum therapy used.

13. Cocker spaniel, Sept. 12-15. Temperature 104.3°F.; catarrhal distemper, conjunctivitis, oral and nasal discharges. Child played with dog while latter was coughing and sneezing, having been sick 5 days. Child contracted curious undiagnosed pyrexia and was sent to local isolation hospital. Inference — child contracted distemper infection from the dog. This dog received combined serum and sulfapyridine therapy. The child also was given sulfapyridine and recovered. A month later the dog developed local mammary abscess which responded to topical treatment with powdered sulfapyridine.

14. Mongrel, Sept. 11-14. Age 4 months; temperature 104.2°F.; bronchial distemper. Recovered in 3 days. Sulfapyridine therapy only.

15. Scottie, Sept. 4-8. Temperature 104°F.; catarrhal and intestinal distemper. Within 4 days temperature 100°F. Slight anemia noted. Sulfapyridine only.

16. Spitz, Sept. 1-14. Age 7 months; chronic distemper; dog had been sick for three weeks prior to treatment; dysentery, fits, anemia and emaciation. Forty-five grains of sulfapyridine were given daily. This patient vomited frequently after taking the drug. The owner became discouraged and ordered the dog destroyed one week after treatment began.

17. Collie, Aug. 6-9. Age 5 years; pneumonia; ill 10 days prior to treatment; developed empyema, died; sulfapyridine therapy.

18. Scottie, Aug. 4-8. Temperature 103°F.; fits and convulsions of nervous distemper. Treated with sulfapyridine only; recovered in 3 days. Dose 23gr a day; vomited once, and a transient anemia noted.

19. Black collie, Aug. 2-6. Age 8 months; temperature 102.5°F.; chronic distemper; had been treated with proprietary medicines without improvement; old hemorrhagic dysentery; thick purulent conjunctivitis; 30gr sulfapyridine administered daily for 5 days; some improvement evident. Dog destroyed at owner's request. Bowel adhesions noted on post-mortem examination.

20. Dachshund, Aug. 1-4. Age 7 years; pneumonia; temperature 104°F., treated with 30gr daily of sulfapyridine and serum. Recovered in one week.

Summary of Clinical Records

Thirty-two dogs (of which the records of 29 are given above) were used in these experiments, with 30 untreated controls.

Eighteen animals were given serum and sulfapyridine simultaneously. All recovered except two chronic cases which were destroyed at the owners' request.

Fourteen animals were given minimum doses of sulfapyridine only, 4 to 6 times a day. All recovered in 3 to 4 days except two chronic enteric cases, which died.

While these results are extremely encouraging, it should be pointed out that the virulence of distemper is known to vary, and that the cases studied may have been due to a relatively mild form of the disease. However, there has been a similarly gratifying response to sulfapyridine therapy in later cases not reported here.

Some 30-odd control cockers and beagles were kept untreated except for possible proprietary remedies. These dogs ran the usual long course of the disease, with subacute or chronic symptoms such as extreme emaciation, dehydration, purulent rhinitis, recurrent pyrexia, or hemorrhagic enteritis, and most of them died or were destroyed because of sequels of chorea or encephalitis. Seven pups recovered slowly. Three recent cases, untreated beagles, still under observation, with catarrhal or intestinal distemper, still show symptoms of pyrexia and general distemper malaise after 10 days.

It has been noted that dogs suffering from distemper often lose their appetite while under sulfapyridine treatment. We are therefore at present stopping the administration of sulfapyridine as soon as the temperature has fallen to normal, instead of decreasing the dosage gradually as was done in the cases recorded. To date, this method appears to have solved the problem; however, further observations are deemed necessary before a definite conclusion on this point can be reached.

Conclusions

1. Sulfapyridine is apparently a specific therapeutic agent in the treatment of canine distemper in the prodromal or early stages of the disease. Every early case treated recovered within 4 days, and the symptoms abated within 2 days. (Previous to treatment with sulfapyridine, distemper usually ran a protracted course of 10 days to 3 weeks, and serious sequelae often ensued.)

2. Sulfapyridine therapy was even more effective when combined with homologous anti-canine distemper serum, as shown by comparative findings.

3. By administration of sulfapyridine basteriostatic effects were produced within 48 to 96 hours, after which time the dosage of the drug was gradually reduced, with complete recovery usually occurring at the end of the fourth to sixth day.

4. Maximum doses do not appear to be necessary in canine practice. We gave 10 to 35gr (0.5 to 2gm) per day, depending upon the size and age of the dog, for a period of two to three days, with tapering doses from then on until recovery was complete. Incomplete observations indicate that a better course may be to discontinue the administration of the drug altogether as soon as the temperature has fallen to normal, in order to avoid the loss of appetite which sometimes accompanies the use of sulfapyridine.

5. Sulfapyridine is a specific for canine infections of the upper and lower respiratory tract including pharyngitis, bronchitis, and lobar or bronchopneumonia in the early inflammatory stages.

6. Sulfapyridine is much less effective in the peracute and chronic stages of distemper. Old, protracted cases showed less response to the bacteriostatic effects of the drug, but beneficial results were noted in most instances.

7. Sulfapyridine given in the early stages tends to prevent the complications and serious sequelae of distemper, such as hemorrhagic enteritis, dysentery, or chorea.

Recent Materia Medica

XI. Thyroid and Parathyroid

By PROF. VICTOR LEWITUS
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The Thyroid

SINCE the dawn of medicine, the study of the thyroid gland—its structure and functions—has fascinated scientific minds. It is known that both Hippocrates and Galen studied its structure; but Eustachius first determined it to be a single gland. The Chinese were reputed to have employed burnt sponge and seaweed ashes to treat goiter, even though they did not recognize the presence of iodine in such natural substances. Cæsar observed the enlarged necks which characterized the Gauls, and the Romans early noted that slaves with protruding eyeballs showed fatigue quite readily. Pliny blamed polluted water for the condition, stating "Only men and swine are subject to swellings in the throat, which are mostly caused by the noxious quality of the water they drink." The first recorded *bona fide* investigation of thyroid disease is traceable to one Caleb Perry, English practitioner, whose report of eight cases in 1825, included a description of the enlargement with concomitant bulging eyes, excessive heart action, and facial expression of frenzy or fear. Later, keen interest was indicated regarding the dull-witted individuals discovered in the goitrous districts of Switzerland and France. It was John Curling who discovered, in 1850, that although cretinous idiots possessed swollen necks, they actually had little or no thyroid tissue. The swelling, he noted, was in reality mostly fat tissue. In 1873, Sir William Gull observed that lowered activity and lessened mentality in adult women was in some manner associated with sluggish thyroids; and in 1878 William Ord named such a condition "myxedema."

These preliminary observations prepared the way for the first thyroidectomy performed by Theodore Kocher, the great Swiss surgeon, in 1878. A few years thereafter (1883), Reverdin noticed that complete removal of the thyroid gland results in symptoms identical with myxedema, and this condition is now referred to as "operative myxedema." Schiff was probably the first to conclude that extirpation of the entire thyroid body in dogs inevitably causes death. He demonstrated (in 1884) that its removal causes spasms, tremors, and convulsions in these animals, and that the symptoms can be prevented if a piece of the healthy gland is grafted subcutaneously, or if thyroid extract is given orally or intravenously. To Schiff we owe a great debt, for he first made it clear that feeding thyroid material from other animals, such as sheep, cures the dog. This enabled physicians to reason that the same principle might apply to humans. Incidentally, this same contribution paved the way for the discovery of insulin, for the thyroid experiments clearly showed that when human endocrine functions fail, the hormones of lower animals may be substituted for the lacking material, thus extending life. In the same year (1884), Sir Victor Horsley produced myxedema in monkeys; and in 1888, Semon concluded that cretinism, myxedema, and surgical myxedema should be placed in the same category.

In 1896, Baumann discovered that the thyroid gland contained appreciable amounts of iodine; and next came the establishment of a correlation between thyroid activity and iodine content. During the same year, Magnus-Levy laid the groundwork for the basal metabolism test, since he concluded from his studies that normal persons produce constant amounts of energy, whereas in cretins or following thyroidectomy the energy production is much less. In 1915, Kendall isolated thyroxin from the thyroid gland; and in 1927, Harington and Barger synthesized thryoxin.

Sources and Chemical Composition

Officially, acceptable thyroid substance consists of the cleaned, dried, powdered gland from domesticated animals from which fat and connective tissue have been

removed. To meet U.S.P. requirements, such a powder must assay from 0.17 to 0.23% of iodine in thyroid combination and must be free from inorganic iodine or any other form not peculiar to the natural gland. In case the gland exceeds the above limits it may be diluted with weaker thyroid substance or with salt or lactose.

Dispersed within the so-called colloid that normally fills the follicles of the gland, are found the basic materials that exert their hormonal influence upon the organism. These consist of a hormonal complex all components of which have not, as yet, been definitely determined. There are a number of components that have thus far been isolated, but it is not certain whether these actually exist under natural conditions within the functioning gland.[1] Among these isolated substances is thyroxin, perhaps the most active constituent; diiodotyrosine, much less active; iodized proteins or peptides; amino acids combined with iodine; and possibly free iodine which may be present only temporarily in the functioning thyroid gland. The complexity is demonstrated by the fact that the protein compounds exist in an uncertain ratio, the combination being termed iodothyreoglobulin. Though the isolated products, especially thyroxin, resemble thyroid substance in activity, it has been observed that the administration of total thyroid furnishes more favorable results.

Thyroxin.—Thyroxin is one of the active principles of the thyroid gland, either natural or prepared synthetically. It contains not less than 64% of iodine as an integral part of the thyroxin molecule.. Chemically it is: *b*—[3,5-diiodo-4-(3',5'-diiodo-4'-oxyphenoxy)-phenyl]-a-amino-propionic acid. In other words, it is a highly complex amino acid containing four atoms of iodine per molecule. Although the synthetic product is but two-thirds as active as the natural, adjustment in dosage may be made to obviate any such discrepancy. Thyroxin is used essentially for the same purpose as the whole thyroid preparations, but the advantages of accurately determined dosage and prompt results are noteworthy. In general it is indicated in the absence or lessening of thyroid activity, evidenced by such symptoms (in humans) as simple goiter, cretinism, and myxedema. Thyroxin influences the blood pressure, pulse rate, nitrogen metabolism. It usually relieves myxedema and may produce hyperthyroid states. It markedly influences the basal metabolic rate, each 1mg increasing the BMR in adult humans approximately 2%. Given orally or intravenously there is usually no immediate effect except slight increase in respiratory rate or pulse rate; but after 24 to 36 hours the pulse rate shows definite increase. Weight loss and nervous reactions may ensue, and in case the drug is administered for several more days typical hyperthyroid symptoms follow, including not only the signs mentioned, but also tachycardia with elevated pulse rate, and fatigue. In myxedema, small doses cause mild stimulation. In humans, it is thought that thyroxin produces its maximum effect, following a single injection, in ten days; the effects last for about three weeks. In general (in humans), 1mg of synthetic thyroxin by injection is equivalent to about 3 to 5gr of desiccated thyroid substance orally. The dosage in dogs is 1/64 to 1/32gr (0.001 to 0.002gm) orally or intravenously. It is advisable to commence treatment with the lower dosage, later increasing as required. The thyroid substance is administered to dogs in doses of ½ to 4gr (0.03 to 0.25gm). The amount of thyroxin required to produce hyperthyroidism is only slightly above the range of the therapeutic dose. Hence proper caution in watching for symptoms must be observed. Animals should not be worked or overexerted while under thyroxin therapy, and adequate protein should be included in the diet to make up for losses sustained through the action of the drug.

Diiodotyrosine.—Another complex amino

[1] Kendall states: "The data offer further indication that all of the iodine in the gland is not in the form of thyroxine. The observations are in keeping with the chemical differentiation which I have reported; between 40 and 50% of the total iodine in the thyroid gland is present in a physiologically inert form. Opposed to these results concerning the presence of physiologically inactive iodine compounds are the observations of Hunt, that the activity of desiccated thyroid is greater than that of thyroxine when compared on the basis of their iodine content. This observation could be explained provided the effect of 'active' thyroxine as it occurs in the thyroid gland was but three or four times greater than the effect of pure crystalline thyroxine. The nature of the physiological response to thyroxine is such that there can be little doubt that the molecule must be first incorporated within the functioning protoplasm."

acid, containing two atoms of iodine per molecule, is thought to be present in the thyroid gland. It may be derived from thyroxin itself. It is chemically 3, 5-diiodo-4-hydroxyphenyl-alanine. Whereas thyroxin raises the basal metabolic rate, diiodotyrosine lowers it in proportion to the dosage. Thus it has been employed in the therapy of hyperthyroidism, following the discovery of Neisser in 1920 that small amounts of iodine bring about lessening of the thyrotoxic symptoms. It appears that the advantage of diiodotyrosine is mainly that of obviating the effects of iodism, which is usually evidenced following the administration of Lugol's solution or some other such iodine preparation. The drug may be continued for longer intervals of time than inorganic iodine preparations without reversion of the thyroid gland to its previous hyperactive state.

Application and Summary

Thyroxin may be used in the treatment of all forms of congenital or acquired hypothyroidism; following thyroidectomy; and in those conditions registering subnormal metabolic rates which are suspected of having an endocrine origin. Diiodotyrosine is more limited in its application, being suggested in cases of hyperthyroidism to replace the ordinary inorganic iodine preparations.

Summarizing, it may be stated that the thyroid secretion normally serves as a catalyst in the adult animal, being especially active during catabolism.

It has been demonstrated that in the immature animal, thyroidectomy causes not only marked retardation in growth but also delay in ossification. Furthermore, the genitalia are stunted and the germ cells often never attain maturity. It has also been observed that the pituitary gland hypertrophies following ablation of the thyroid, the anterior portion particularly showing colloid degeneration. Likewise, the cortical portion of the adrenal gland enlarges, involution of the thymus gland is retarded, cerebral development is arrested, and there is a pronounced reduction of the general and basal metabolism. The temperature is usually subnormal, the hairy coat is imperfectly developed, and the skin is often rough and thickened. Quite often the muscles lose their tonicity; hence activity is decreased and the animal is apathetic. Cellular regeneration is inhibited, sexual appetite and functions are lessened, the nervous reactions are sluggish, and at times anemia is also present.

Winchester has recently shown that thyroid hormone administered to laying hens increases the rate of egg-laying. Graham has demonstrated increased milk production in cows following thyroid feedings. Allee, Collias and Beeman have observed that relatively large doses of thyroxin induces a sudden and complete moult in hens and incidentally results in loss of social position among them. Furthermore, such doses cause decrease in laying capacity, reduced size of comb, loss of weight, and lessened activity. Small doses do not induce such changes.

In the growing organism, thyroid secretion is concerned in tissue differentiation,[2] the immature type of cell being stimulated to change to the adult type. In addition, it appears that the thyroid exerts a specific effect on nerve tissue, increasing irritability. Different responses are elicited in its presence by different tissues. From a practical point of view, disorders of the thyroid gland may produce one of two conditions: hypothyroidism or hyperthyroidism. The correction of hypothyroidism is possible through use either of thyroxin (synthetic or natural) or of thyroid substance, the latter having a somewhat different effect from the former because of some undetermined components. The treatment of hyperthyroidism, other than surgical intervention, has recently been attempted with diiodotyrosine to avoid the effects of iodism resulting from the use of inorganic iodide preparations. Incidentally, the use of thyroxin is also suggested in mild hypothyroidism in which the BMR is not much altered, and in certain forms of sterility in animals; and Jameson has recently suggested its use in the treatment of such ophthalmic conditions as acute keratitis,

[2] Gudernatsch discovered this function in 1913, observing rapid and premature metamorphosis in tadpoles (without increase in size) after thyroid feedings.

iritis, post-operative cyclitis, incipient lens changes (cataract), bulbar tenderness, and photophobia. He finds that tension is moderately reduced, that tenderness is relieved, and that contraction of the pupil does not follow its use. The solution (2mg thyroxin per cc) is applied by instillation into the conjunctiva. It should be noted that thyroxin is indicated in simple (colloid) goiter but not in exophthalmic goiter.

The Parathyroids

Discovery of the parathyroid glands is attributed to Sandström (1880) who assigned their present name and studied the histologic differences between these and the thyroid glands of small and large animals. Kohn (1895) located the structures in cats and rabbits, noting how the "internal parathyroid" of rabbits is buried in the lateral thyroid lobe. Gley (from 1891 to 1897) noted that removal of the parathyroids causes fatal tetany, producing symptoms which are quite unlike those following thyroidectomy. The important discovery of Parhon and Urechie, that injection of calcium salts relieves tetany in parathyroidectomized dogs, was made in 1907. Since the chemical composition of the parathyroid glands is not exactly known, the extracts are used today.

It has long been recognized that when a partial parathyroidectomy is performed, the animal recovers without any permanent metabolic or other disturbance. However, should all of the parathyroid glands be removed, the animal soon shows the first signs of increased muscular rigidity with fine tremors of the voluntary muscles. For example, cats show tetanic eye signs and walk unsteadily, shaking each foot; and dogs manifest a staggering gait. The heart rate is extremely rapid, respiration is abnormally increased, dyspnea follows light exercise, and stupor and great depression supervene. Young animals often show convulsive attacks early. It appears that carnivora and herbivora are equally affected. The animal may succumb in a few hours, but may survive for several weeks following this operation. In some instances, investigators have reported complete recoveries, but it may be assumed that the parathyroids were not entirely removed in such cases.

Although extracts of the parathyroids for both oral and subcutaneous administration have been prepared, thus far oral preparations have proved unacceptable because of inconclusive evidence as to their effectiveness. In other words, the function of maintaining or elevating the concentration of calcium in the blood serum does not seem to be influenced by oral therapy. However, when solutions or extracts of ox parathyroids are injected either intramuscularly or subcutaneously, the calcium content in the serum of parathyroidectomized animals can be maintained at a normal level or even raised. In fact, the calcium levels can be elevated to such an extent (in both normal and parathyroidectomized subjects) that the animals may be killed by overdosage. Glandular extracts are assayed according to the level to which the serum calcium is raised either in normal or in parathyroidectomized animals.

Following injections, the plasma calcium begins to rise in about four hours (in humans) reaching a maximum in about 12 to 18 hours; and returning to the original level in about 24 hours. Accompanying the elevation in serum calcium, increased urinary excretion of the calcium occurs, and there is also increased elimination of inorganic phosphate, with a concomitant decrease of the latter in the plasma. It has been observed that tolerance or immunity to the effects of the parathyroid extracts may occur following continuous or frequent injections. The use of parathyroid extracts is indicated in acute tetany (tetania parathyreopriva), infantile tetany, and possibly gastric tetany, though the latter condition may not yield to such therapy. Since the use of parathyroid extracts or solutions is attended with great danger of overdosage (hypercalcemia),[3] blood studies to determine the serum-calcium level must be made continually during treatment. It is suggested that the dose be given at 12-hour intervals for a few days; then discontinued for several weeks; resuming treatment only

[3] Hyperparathyroidism is evidenced by mobilization of calcium from the bones, deposition of calcium in the tissues and especially in the kidneys, besides hypercalcemia. Urinary stones are often present. Babkin has recently shown that repeated injections of the extract in dogs causes inhibition of gastric secretion, with prolonged inhibitory after-effects following cessation of therapy.

if blood determinations indicate a necessity for it. Available extracts are usually made by extracting the fresh or frozen glands from which superfluous fat and connective tissue have been removed. The U.S.P. requires that "one cc of solution of parathyroid possess a potency equivalent to not less than 80 parathyroid units and not more than 120 parathyroid units, each unit representing one-hundredth of the amount required to raise the calcium level of 100cc of the blood serum of normal dogs 0.001gm within from 16 to 18 hours after administration." In other words, each cc of the available commercial parathyroid extracts contains about 100 U.S.P. units. Dogs require on an average from five to 25 such units.

It should be pointed out that in parathyroid insufficiencies, either temporary or permanent, the administration of calcium (in the form of the gluconate or related compound) together with vitamin D may be substituted for the administration of the hormonal material. Recently, a derivative of ergosterol known as tachysterol has been converted to "dihydrotachysterol" and has been shown by Albright and others to increase absorption of calcium from the intestine and also to augment phosphorus excretion through the urine. Although it does not act as promptly as parathyroid extracts, dihydrotachysterol appears to have more prolonged effects. However, it is highly potent and requires frequent blood determinations during the course of administration to avoid abnormal rise of blood-calcium levels. The maintenance dose in humans is 0.5 to 1cc of the 0.5% oil solution daily. Excessive doses have produced anorexia, nausea, vomiting, and great weakness.

In certain cases, it has been found advantageous to combine parathyroid extract with thyroid substance on the assumption that there may be a dual insufficiency in sluggish patients or those suffering with hypocalcemic conditions. Hence, parathyroid-thyroid tablets have been indicated in certain forms of rickets, osteomalacia, fractures, tetany, eclampsia, muscular spasms, chorea, distemper, and chronic infectious states.

Surgical Equipment and Its Sterilization*

Experience has demonstrated that only with sterile technique and the use of sterile towels, linens and gloves can surgery be uniformly successful. Two paramount reasons for sterile technique are: (1) It affords a field where the surgeon works with ease and safety. (2) It reduces the possibilities of wound infection.

Some veterinarians are handicapped in doing surgery by not having centralized institutions where autoclaves and trained technicians are at hand; yet by using simple practical equipment they may set up a surgical department that will be the solution to their problem.

Sterile technique consists not only of being able to use sterile articles without contaminating them, but also of actually preparing articles for sterilization and performing the sterilizing process.

Some articles can be sterilized by leaving them in disinfecting solutions, some by boiling, and others by subjecting them to 15 pounds of steam pressure for 15 or 20 minutes or longer. The veterinarian can use the household pressure cooker for an autoclave.

In preparing a sterile setup the veterinarian must keep in mind three things: (1) instruments and articles needed for the actual surgery, (2) the articles needed for the surgeon and his assistant, (3) the articles needed for the patient.

Sterile technique is acquired only through persistent practice. Breaks in sterile technique should not be tolerated, for safety in surgery depends upon careful observation of every detail.

It is desirable for veterinarians who are not acquainted with a surgical setup to visit clinics or hospitals which have them in order to get a perspective on the whole situation. The details can be learned from someone who is acquainted with the procedure.

MILDRED RADAKOVICH, R. N.
Director of Nursing, Simpson College.
Indianola, Ia.

* Abstract of a discussion presented at the Mid-West Small Animal Association meeting at Burlington, Ia., November 7, 1940. Miss Radakovich demonstrated every step in the sterilization of instruments, gowns, and other equipment, as well as the methods to be used to maintain aseptic conditions during the operation.

Tetrameres Americana (Cram 1927) Found in Eastern Cardinal in Missouri[1]

By A. J. DURANT and D. R. KNIGHT, Columbia, Missouri
Veterinary Science Department, University of Missouri

ACCORDING to Cram,[2] Tetrameres is of fairly common occurrence in chickens (*Gallus gallus*) in North America and in some localities is of considerable pathological significance. In addition, she reports this parasite in bob-white quail (*Colinus virginianus*).

Cram[3] has also shown that two species of grasshoppers, *Melanoplus femur-rubrum* and *M. differentialis*, serve as intermediate hosts for *Tetrameres americana*. Beaudette[4] of New Jersey has studied the occurrence of the Tetrameres in that state and finds the domestic chicken, turkeys and quail naturally affected. In the examination of 6042 chickens (two weeks of age or older), 81 turkeys and 22 quail between January 1, 1930, and December 31, 1931, he found 86 birds to be infested with *Tetrameres americana*. In addition to the single infestation in 81 turkeys, one infested quail was found in the 22 examined.

So far as the authors' knowledge goes, the Tetrameres parasite has never before been reported in Missouri or in the cardinal, *Richmondena cardinalis cardinalis*.

The affected cardinal, discovered by two naturalists, Professor and Mrs. Wesley Wiksel, was found on the bluff of the Hinkson Creek near the city limits of Columbia, Missouri. The bird was unable to fly and was attempting to hide in the tall grass. It was brought to the Veterinary Science Department to determine if anything could be done to restore its health. It died the day after being received in the laboratory. There were no particular symptoms except that the bird was out of condition, the feathers being dishevelled and some of the tail feathers gone.

An autopsy revealed a great emaciation. There were no significant lesions except

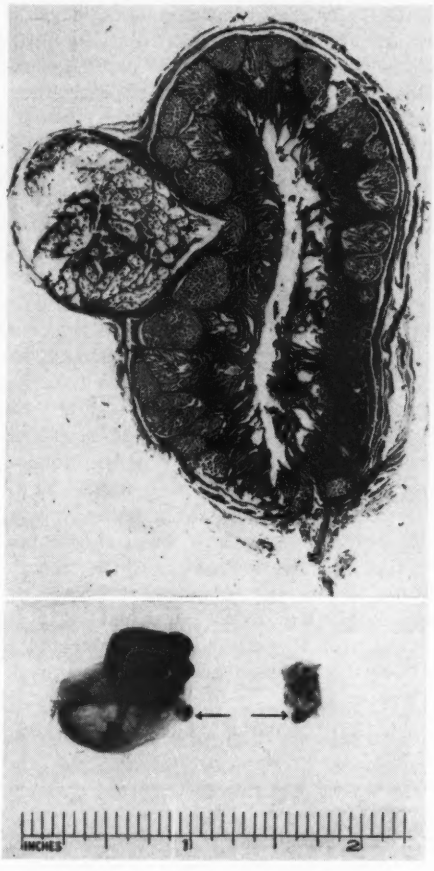


Fig. 1. Photomicrograph of a histological cross section through the stomach of the red bird made approximately through the center, longitudinally, of the *Tetrameres americana*. Note the tail of the Tetrameres projecting almost through the wall of the stomach

Fig. 2. The liver, gizzard and part of the proventriculus which contains a Tetramares nodule; also a section cut from the proventriculus containing one parasitic nodule. (Arrows indicate the location of the two nodules.)

[1] Contribution from the Department of Veterinary Science, Missouri Agricultural Experiment Station. Journal Series No. 745.

[2] Cram, E. B., 1927. *Bird parasites of the nematode suborders Strongylata, Ascaridata and Spirurata.*

[3] Cram, E. B., 1931. *Developmental stages of some nematodes of the Spiruroidea parasitic in poultry and game birds*, U. S. Dept. of Agr. Tech. Bul. 227.

[4] Beaudette, F. R., 1933. *Distribution of Tetrameres americana in New Jersey.* Journal of Parasitology, Vol. XIX, No. 4.

three reddish nodules (Fig. 2), on the outer surface of the proventriculus. These nodules were 2.79mm in diameter and were raised above the surface (Fig. 2). One of these nodules was removed and dissected, showing the characteristic red-ribbed bulging appearance of the typical female *Tetrameres americana*, crowded with eggs. It was discovered by dissection that the entire nodule was the swollen and distended female containing blood and eggs. A histological cross section made through the stomach of the bird at the point where the parasite was embedded in the wall, indicates that the worm lies in the stomach in such a position that the tail protrudes through the duct of the gland to facilitate passage of the eggs and the head is in the fundus of the gland to facilitate feeding (Fig. 1). Because of the fact that the cross section was not made exactly through the center of the parasite in the accompanying photomicrograph, that portion of the tail of the parasite shown does not extend entirely through into the duct of the stomach gland. Had the section been made exactly through the center of the parasite, the tail undoubtedly would have been shown protruding into the duct of one of the stomach glands. Cram has described this peculiar phenomenon in detail. One male was observed in the specimen. It was located in one of the stomach glands of the proventriculus.

Whether the parasite caused the death of this bird or whether some previous injury had so lowered its resistance that it succumbed to the parasite is not known. It appears that there may have been a sufficient number of parasites to cause serious illness previous to the time when the autopsy was held. According to Cram, 19 to 25 days after infestation is the period when the most serious symptoms develop in birds affected with this parasite.

Despite the senior author's 20 years of studies, including thousands of autopsies on various kinds of birds, this is the first observation of this particular parasite in any species of birds examined in Missouri, and it appears that this particular parasite is somewhat rare in this state. It suggests, however, that, wild birds which are found dead or seriously sick, should be investigated to determine the cause of death.

The Veterinary Science Department of the University of Missouri is cooperating with the Cooperative Wildlife Research Unit at the University, the Bureau of Biological Survey, and the Missouri Conservation Commission in the study of diseases and parasites affecting wildlife, both birds and animals, and will welcome any specimens which might serve a useful purpose in the study of disease of wildlife.

Phenothiazine vs. Hemoglobin In Chickens

The toxic effect of phenothiazine upon the blood elements has been mentioned frequently in the literature. Anemia has been reported in man following the administration of phenothiazine in from four to five times the effective dose. Errington [1] noted that therapeutic doses of phenothiazine cause anemia and hemoglobinemia in horses. Graham [2] reported a drop in R.B.C. and hemoglobin within a week to 10 days following administration to horses.

This experiment was planned to study the effects of phenothiazine upon the blood hemoglobin of chickens.

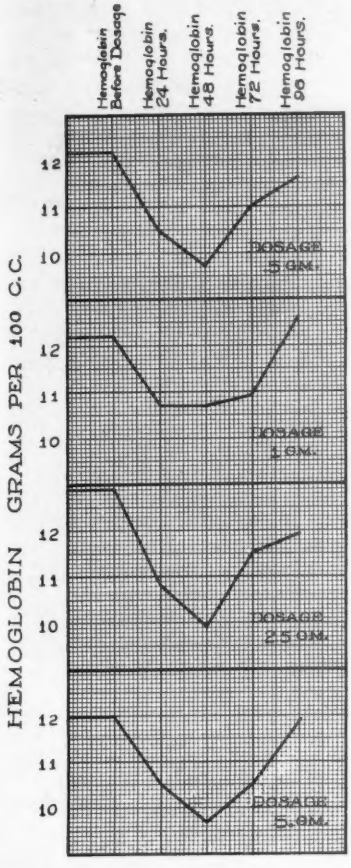
Procedure.—Thirty-six mature hens averaging 4.2 pounds each were divided into four groups and hemoglobin readings were taken on each bird before and after administration of phenothiazine, the blood being collected from the wing vein. The normal hemoglobin range of the fowl is extremely variable, ranging from 9.7 to 11.1gm (corrected reading) per 100cc of blood, according to Dukes [3]; therefore, to present a more

[1] Errington, B. J., 1941. *Vet. Med.* 36:4, pp. 188-193.

[2] Graham, Robert, 1941. Paper presented at the annual meeting of the Ohio State Veterinary Medical Assn.

[3] Dukes, H. H. *Amer. Jour. Physiol.*, 96:1.

evenly balanced picture a hemoglobin average was determined for each group of birds.



Average Decrease of Hemoglobin in Each of the Groups

A Dare's hemoglobinometer was used in all hemoglobin determinations.

The therapeutic dose of phenothiazine for the fowl as recommended by McCulloch and Nicholson,[4] is from 0.05 to 0.5gm. In this experiment dosages from 0.5 to 5gm were administered in an attempt to establish a relationship between the amount of the drug given and the decrease in hemoglobin. A fine powdered form of commercial phenothiazine was used, being administered in capsules.

Each bird in group I was given 0.5gm; group II, 1gm each; group III, 2.5gm; and group IV, 5gm. Hemoglobin readings were taken on each bird at intervals of 24, 48, 72 and 96 hours after dosing .

Results.—All birds receiving phenothiazine showed a definite decrease in hemoglobin. In most cases this decrease was approximately 2gm of hemoglobin per 100cc of blood, but it was much greater in some birds and less in others. The greatest decrease in an individual bird in each of the above four groups was as follows: Group I (receiving 0.5gm), from 13.2 before dosing to 8.4 within 48 hours; Group II (receiving 1gm), from 12gm before dosing to 9.2 within 48 hours; Group III (receiving 2.5gm), from 12.2gm before dosing to 8.2gm within 48 hours; Group IV (receiving 5gm), from 12gm before dosing to 8.1 at end of 48 hours. The accompanying graphs represent the average decrease in hemoglobin in each of the groups.

Conclusions

1. Phenothiazine, when administered to chickens, caused a drop in the hemoglobin amounting to approximately 2gm per 100cc of blood. This decrease was most noticeable 48 hours after administration, after which a gradual rise in hemoglobin content occurred.

2. The decrease in hemoglobin of birds receiving 10 times the therapeutic dose did not differ materially from that in birds receiving the normal dose, possibly due to the fact that a large part of the drug was eliminated unchanged in the feces when large doses were administered.

3. More information is needed as to the effect of phenothiazine on domestic animals. Such information as is available at this time leads to the conclusion that it causes anemia in solipeds and in the fowl but does not have this effect in sheep. Further that the anemia is of moment and of considerable duration in the equidae but evanescent or of no consequence in the fowl.

BERT MERIWEATHER.

Manhattan, Kans.

[4] McCulloch, Ernest C., and Lyle G. Nicholson, 1940. *Vet. Med.* 35:7, pp. 398-400.

IMPROVED STOCKS FOR RESTRAINT OF ANIMALS

A Wisconsin firm manufactures the stocks illustrated on this page. They may be set at the end of a chute or hallway, or in a doorway, without interfering with the use of the passage (for swine), since they open from top to bottom; yet with the movement of a single lever may be closed to hold farm animals of any size, large or small. They are useful for "ringing," ear-marking, clipping tusks, dehorning and all operations about the head, and for various other procedures, such as castration of old boars, tuberculin testing wild ones, etc.

Screwworm Threatens Livestock

Winter survival of unusually large numbers of screwworms is a potential threat this year to livestock in many parts of the country, according to the U. S. Department of Agriculture. The screwworm kills livestock worth several million dollars each year in the south and southwest. The number of screwworms in the Laredo, Texas, area last December was the greatest ever recorded there. Many screwworms and flies over-wintered in Arizona and southern California. If favorable weather conditions continue, a serious outbreak may be expected in the early summer.

Early treatment of livestock wounds, whether infested with screwworms or not, prevents losses of animals and checks the multiplication of the pest, since it breeds only in wounds of warm-blooded animals. Treating all livestock wounds with diphenylamine is recommended. If they are infested with screwworms, benzol should be applied first to kill worms.

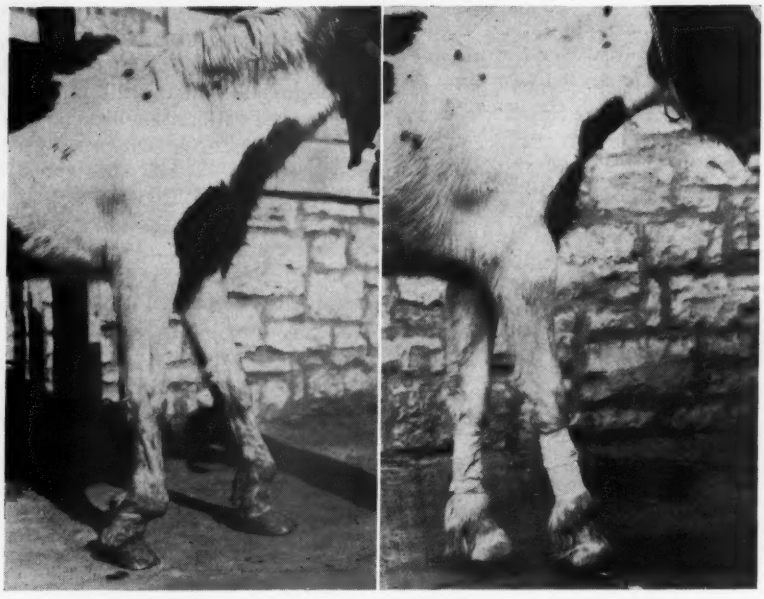
Diphenylamine, a crystalline chemical used in the dye industry, is a new screwworm treatment developed by the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture after testing some 600 materials. It is effective in protecting wounds against infestation for at least three days.

Screwworms are often spread by the shipment of infested animals. The Department of Agriculture urges careful inspection and treatment at loading points of livestock shipped from Texas, Arizona, southern California, Florida, South Carolina, and southern Georgia. This will help to check spread of the parasites to northern parts of the country. It is important also to inspect and treat livestock at unloading points.

Bilateral Contraction of Superficial Flexor Tendons in a Shetland Pony

A contraction of the digital flexor tendons of the horse is of rather common occurrence; but uncertain etiology. It has been reported following synovitis of either the carpal sheath or the great digital sheath. It is found not infrequently as a congenital condition in mule colts, but only occasionally in horse colts or calves. In congenitally affected animals the deep flexor tendon is more often at fault than the superficial, but in cases occurring in later life either tendon or both may be affected equally often.

The most successful treatment to date consists of tenotomy of the affected tendon or tendons. The superficial tendon lies on the volar surface of the deep tendon. The two are enclosed in the carpal sheath, which extends nearly to the middle of the large metacarpal bone. Here for a distance of about eight inches the two tendons are easy to palpate separately, before both are enclosed in another synovial sheath, the great digital. The tenotomy is performed in this eight-inch sector, on the medial surface in the case of the foreleg. Because of the larger blood vessels in that area of the hind leg, it is there accomplished best on the lateral surface.



Left: Bilateral contraction of the superficial digital flexor tendon in a Shetland pony before operation and right: After being operated upon. Although the owner thought the condition was of traumatic origin it is more likely that it developed from a nutritional deficiency or from a congenital anomaly

A male shetland pony, about eight months of age, was presented at the veterinary clinic of Kansas State College February 18, 1941, with symptoms of bilateral contractions of the superficial flexor tendons. The history was that about two months previously the colt, while running in a nearby pasture, had accidentally stepped into a hole. In a few days it developed symptoms of a local sprain in the fetlock joint of the right foreleg. No treatment was given, and several days later the fetlock joint was observed to be slightly enlarged. In the course of a month the opposite foreleg was noticed to be enlarging also, and at about the same time the fetlock joints of both forelegs appeared slightly flexed. This flexion or knuckling increased until the patient was brought to the clinic.

The condition was diagnosed by Dr. E. R.

Frank as contraction of the superficial digital flexor tendons because the flexion of the fetlock joint persisted while the foot remained in a normal position. With the contraction occurring in the deep flexor tendon, the heel is raised and the animal supports its weight on the toe.

The animal was cast in lateral recumbency, and a small area over the proposed site of operation was shaved and prepared for an aseptic operation by the use of 1-1000 bichloride of mercury pack. Anesthesia was obtained by infiltration of the skin and subcutaneous tissue with 5cc of a 1% solution of procaine hydrochloride. An incision about one-fourth inch long was made through the skin. A No. 10 Bard-Parker knife blade was inserted flatwise into the incision between the superficial and deep flexor tendons; then the sharp edge was turned outward and the tendon fibers severed. To facilitate tension of the tendon the carpal joint was fastened in a fixed position and the loop of a twitch was placed over the pastern with the handle carried forward over the plantar surface of the foot. Using the twitch as a lever, any desired amount of tension could be placed on the flexor tendon.

The wound was covered with a dry pack of pure iodoform and bandaged. The dorsal surface of the metacarpal region and the fetlock joint were covered by a splint of No. 9 galvanized iron, shaped to fit the leg, and bandaged tightly. The opposite leg was treated in the same manner with the animal cast on the opposite side.

The splints were removed on the fourth, sixth, and eighth days, following the operation, in order to observe the progress of the extension, then replaced and rebandaged. On the ninth day the splints were removed again and the left one discarded permanently. The right one was replaced and the colt was sent home on February 28th, ten days after the operation. The right splint was removed seven days later, when the colt appeared sound and normal.

The operation was performed by Dr. E. R. Frank, who also supervised the aftercare of the animal.

CHARLES JONES.

Lisbon, N. Y.

Calcium and Phosphorus Deficiency in a Colt

A colt, six months of age, was presented for treatment at the veterinary clinic of Kansas State College November 11, 1940. The animal had appeared normal up to three days previously, when it fell while being brought in from pasture and was unable to rise. After being assisted to its feet, it was unable to walk, the hind legs showing incoordination. The owner said that the animal was highly nervous, but that its appetite was good. The pulse was 43; respirations 15; temperature 101.0°F. A fecal examination (flotation method) was negative for evidences of parasitism. A blood analysis revealed a calcium and phosphorus deficiency, the phosphorus content of the blood being 3.57mg per 100cc and the calcium content 8.11mg.

The patient was given 15gm of dibasic sodium phosphate in 300cc of distilled water intravenously and placed in a box stall. Fecal examinations made daily for one week continued to give negative results. A second blood examination November 13th revealed a phosphorus content of 3.66mg per 100cc and calcium 8.72mg. The sodium phosphate therapy was continued, using the same dosage. In addition, 500cc of 20% calcium gluconate was administered intravenously on the seventh day of hospitalization. The third blood examination, November 19th, revealed a phosphorus content of 3.74mg, showing a steady trend toward normal calcium and phosphorus levels.

On the 10th day of hospitalization the patient was given a limited amount of exercise, and thereafter the amount of exercise was increased daily. Altogether four injections of dibasic phosphate and one of calcium gluconate were administered intravenously during the three weeks of hospitalization. The blood samples on the 12th day revealed a practically normal condition, the phosphorus content being 4.34mg per 10cc and calcium 9.89mg. The diet during hospitalization consisted of good quality alfalfa hay, kept before the patient at all times, bran and grain (1/3 bran and 2/3 corn and oats), and bone meal.

The patient was released December 1st

with a favorable prognosis. The owner was advised to continue adding a small handful of bone meal to the feed twice daily. When last heard from (April 14th) the colt was apparently normal.

Discussion.—Numerous cases of calcium and phosphorus deficiency have been reported in the literature; however, this case is interesting because of the history of sudden acute occurrence without previous symptoms. The condition was alleviated by treatment with dibasic sodium phosphate and calcium gluconate intravenously.

This case calls attention to the fact that a careful supervision of the feed is especially necessary in dry years or under unfavorable conditions of poor growth or damage in storage.

CHARLES A. KENNEDY.

Chicago, Ill.

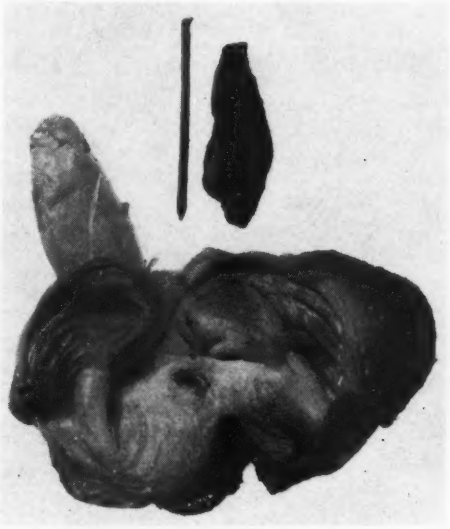
* * * *

Traumatism in Fowl Caused By Foreign Bodies

Although the finding of foreign material in the alimentary tract of fowl is not uncommon, it has seldom been reported in the literature.

The afternoon of March 11, 1941, an adult pullet was presented at the veterinary clinic of Kansas State College for postmortem examination. The bird had been found dead on the roost that morning, having previously shown no noticeable symptoms. Autopsy revealed a tumorous condition of the ovaries and a large blood clot in the abdominal cavity. The liver was much enlarged and of a mahogany color; the spleen likewise was enlarged. The heart was flabby and the kidneys appeared swollen. A diagnosis of leucosis was established.

In the process of opening the alimentary tract a break in the mucous membrane was found about equidistant between the esophageal and duodenal openings of the gizzard. The perforation in the mucous membrane had an irregular diameter of approximately one-quarter inch, extending through the muscular layers and serous membrane of the gizzard. In the abdominal cavity a spindle-shaped mass of fibrous and fatty material was found completely surrounding the nail which had caused the perforation. Sectioning of the material for microscopic examination was impossible because of its hardness. It is possible that a deposition of iron from the nail during the process of walling off with the fibrous material accounted for the denseness of the tissue. The mass surrounding the foreign



Above: The nail and the spindle-shaped mass found surrounding it. Below: The gizzard, showing the perforation caused by the nail

body was one and three-quarters inch in length and its greatest diameter was five-eighths inch.

Dr. M. J. Twiehaus of the Poultry Pathology Department reports that in the postmortem work in his laboratory among the various foreign materials found are: regular broad-headed roofing nails, shingle nails, hair pins and bailing wire of all sizes and shapes. Other objects found have been whole strands of beads, gravel and small rocks, buttons of different sizes, etc.

Dearstyne *et al.*[1] report that perforation of the gizzard has caused death in several instances with abscess formation in all cases. No abscess was noted in this bird. The nail and its covering had the appearance of having been located in the peri-

[1] Dearstyne, R. S., B. F. Kaupp, and H. S. Wilfong, North Carolina Agr. Exp. Sta. Bull. No. 264.

toneal cavity for some period of time without causing the hen any material inconvenience. Other necropsies performed in this laboratory have not exposed abscesses in all cases of perforation of the intestinal tract.

WARREN J. DEDRICK.

Kansas City, Kans.

Metastatic Carcinoma in a Cat

A 12-year-old female Maltese cat was brought to Dr. Earl Hoover in Kansas City, Missouri, for observation, the only history being that of anorexia and lassitude. The owner had noticed this change of attitude for several weeks, the cat becoming progressively weaker.

The mucous membranes were slightly anemic. The temperature was 101°F. The cat was extremely emaciated and listless. Abdominal palpation disclosed one large tumorous mass in the epigastric region, one in the left quadrant at the level of the umbilicus, and still another in about the middle of the abdomen that was quite mobile.

A tentative diagnosis of some progressive tumefaction, possibly a carcinoma, was given. Euthanasia was advised and the owner consented.

The post-mortem examination revealed an indurated mass involving the entire liver, rendering it hard and extremely friable; a similar condition was found in the spleen. A section of the small intestine (ileum) was completely encircled by this neoplasm, which also involved the adjacent mesenteric lymph glands. Laboratory diagnosis confirmed the clinical observation of a metastatic carcinoma.

Judging from the available literature on the subject, it would appear that carcinoma of the gastrointestinal tract of the cat is extremely rare.[1]

CLIFFORD A. LEMEN.

Kansas City, Mo.

Carcinomatous lesions in the abdominal organs of a cat

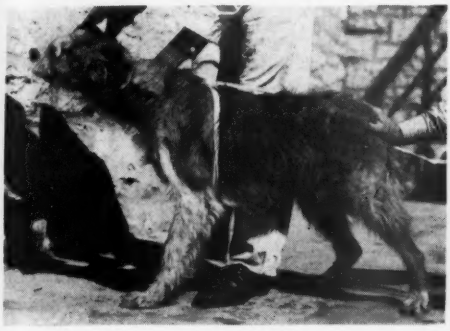
Gapes in Chickens and Other Birds

Dr. Andrew Wiesenthal of Baltimore discovered the gapeworm of chickens (*Syngamus trachealis*) nearly a century and a half ago (1797). At that time he stated that this parasite was destroying 80% of the young chickens in some sections. Changed poultry husbandry practices have brought about a reduction in mortality from gapes, but these worms still take a considerable toll in retardation of growth, not only in chickens but in turkey poults and goslings as well. It is also responsible for severe outbreaks of gapes in young pheasants in which the mortality approximates that among chickens in the 18th century. The gape worm infests many wild birds also. Bureau of Animal Industry investigators have found that barium antimonyl tartrate is the most effective agent for controlling the disease (see *Vet. Med.*, January, 1940, p. 12, for directions for the use of this agent).

[1] See for example: Feldman, *Neoplasms of Domestic Animals*, p. 311; Morrill, 1937. Neoplasms in cats, *Vet. Med.* 32:11, p. 509.

Carcinoma of the Hair Matrix

History.—September 11, 1941, a large three-year-old mongrel dog was admitted to the veterinary clinic of Kansas State College for treatment. The dog had a large

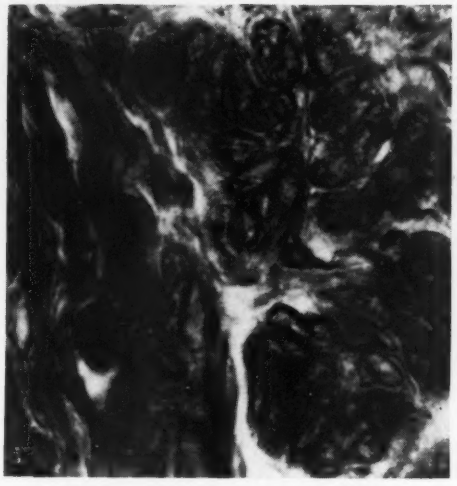


The patient when admitted to the clinic

growth over the left parotid region; this had been present during the greater part of the dog's life, gradually becoming larger. At this time it was about the size and shape of a goose egg and was raw and bleeding from frequent injuries. Because of the excess weight of the growth the dog carried its head inclined to the left. The growth was attached below and slightly posterior to the left ear and weighed 326gm. Upon palpation it resembled a glandular tumor, with firm areas about the size of a quarter spread diffusely throughout the mass. The remaining portion was soft, resembling adipose tissue. The growth was attached to the skin only, thus eliminating the possibility of a carcinoma of the parotid gland.

Operation.—The operative area was shaved and painted with tincture of iodine about 30 minutes before operating. It was then infiltrated with a 2% solution of procaine and the tumor was removed surgically by skinning the area. The large blood vessels were ligated and the edges of the wound drawn together with a series of mattress sutures. An antiseptic powder pack was applied and the head bandaged with a many tailed bandage. This was changed daily for three days. On the fourth day the dog was sent home with a favorable prognosis. Recovery was uneventful.

Diagnosis.—A section of the tumor was examined microscopically and a laboratory diagnosis of carcinoma of the hair matrix was made. The cells in general resembled the basal cells of the malpighian layer in that they were cuboidal or slightly columnar, with a marked affinity for basic stains. The cytoplasm was slight in amount and the nucleus appeared vesiculated. The cells



Photomicrograph of a section of the tumor, showing the cellular structure

were arranged in slender irregular tortuous columns, which fused to form collections of closely packed cells, with a minimum amount of stroma.

Some observers are of the opinion that these tumors arise from the undifferentiated epithelial cells of the matrix from which the hair normally develops, or from the basal or deepest layer of the stratum germinativum of the epidermis. This type of neoplasm has been recognized in only a few instances in lower animals. Feldman states that his collection contains three of this kind, two from dogs and from a horse.

The rate of growth of these tumors is usually slow, and distinct metastasis seldom occurs. These are probably the least malignant of the carcinomas which affect lower animals.

JAMES G. BETTS.

Randall, Kans.

Abstracts

Psychic Disorders in Animals

Serious psychic disorders have been observed in domestic animals. They may follow injury to or diseases of the brain (the fearful condition of dogs after an automobile accident, Borna disease in horses, brain tumors, etc.). Epilepsy and idiocy have been noted in horses, cattle, and dogs. Whether animals suffer from melancholia has not been ascertained. The reverse state, mania, is known to affect some animals (e.g. mania puerperalis in cows). Herds may be attacked by a mass hysteria. Neurosis has been observed in dogs.

* * * *

Therapy of Rickets and Softening of the Bones in Animals

Many authors think that the best and safest way of curing rickets and softening of the bones through absorption or through insufficient supply of minerals in domestic animals is providing a plentiful supply of fresh air and light, exercise, natural forage and green vegetables.[94] In the average establishment these conditions are unfortunately not available and they are sometimes insufficient when the animals do not get enough minerals in proper combination. The first thing to do is to determine exactly how much CaO, MgO, P_2O_5 the animal gets every day in its food, and to correct the ratio between earth alkali and phosphoric acid by administering, according to the deficiency, $CaCO_3$ or $NaHPO_4$. If there is still a quantitative deficiency of either CaO or P_2O_5, it is necessary to add 10% of calcium carbonate every day. A subcutaneous injection of vigantol (vitamin D) may be of use in completing the treatment.

Following these principles, Diernhoefer obtained excellent results curing rickets in 130 herds of swine and softening of bones in 131 herds of cattle.

[93] Frauchinger, E., 1940. Gibt es Geisteskrankheiten auch bei Tieren? *Schweiz. Arch. f. Tierheilk.* 82:7, p. 286. Abst. in *Tierarz. Rundsch.* 46:37, p. 418.

[94] Diernhoefer, K., 1940. Richtlinien und praktische Beispiele für die zeitgemässe Bekämpfung der Rachitis und Knochenverweichung. *Wien. Tierärz. Monatschr.* 27:10-11.

Swine Erysipelas Infection in a Horse

The authors[95] observed a horse lame in the left shoulder and in the left hock. Later on they found a swelling of the hind fetlock. The temperature was high, the appetite changeable. The animal scarcely moved from one spot. Local treatment proved useless, and the animal was finally slaughtered. On necropsy a typical endocarditis of the mitral valves was revealed, each of the valves supporting on its ventricular surfaces large cauliflower-like vegetations. A pure culture of *Erysipelothrix rhusiopathiae* was isolated during the bacteriological examination. Swine breeding had been conducted for 45 years on the same farm where the horse was bred and quite close to the stables, but no cases of swine erysipelas had been observed before.

* * * *

Effects of Tetanus Anatoxin Injection in Horses

If rightly used, tetanus anatoxin may produce in horses a solid and long-lasting immunity.[96] The practical application of vaccination by means of two injections of 1.2cc and 2cc respectively of the tetanus anatoxin, adding tapioca as a substance favoring immunity, with a third injection of 2cc one year later, gave undoubted proof of its efficacy against tetanus and of its superiority over antitetanus serum as a prophylactic method. Wherever this vaccination has been adopted, tetanus has disappeared. The new technical process of hyperimmunization has made it possible to reach a high production of antitetanus serum for therapeutic purposes. After getting this serum with a very high antitoxic power, previously unknown, it was possible to prepare real solutions of tetanus antitoxin low in proteins; its use, in a large number of cases, seems to cause a very remarkable decrease in the frequency and importance of serum anaphylaxis in man.

[95] Paterson, J. S., and T. G. Heatley, 1938. A case of infection of the horse with *Erysipelothrix rhusiopathiae*. *Vet. Rec.* 94:1.

[96] Ramon, G., and E. Lemétayer, 1939. Valeur et durée de l'immunité chez le cheval vacciné contre le tétanos au moyen de l'anatoxine tétanique. Conséquences. *Bul. Acad. Vét. de France* 12:10, p. 413.

Foreign Bodies in the Stomach of Cattle

The author[91] believes that cattle are usually aware of the presence of a foreign body in the mouth; nevertheless, they continue chewing the cud and hasten its swallowing.

Traumatic gastritis appears not to be very dangerous, 78% of the animals recovering, unless the foreign body invades the thoracic organs. In slaughterhouses one may observe frequently in animals slaughtered for normal reasons, gastroperitoneal, gastrophrenic, or gastrohepatic adhesions, or foreign bodies imbedded in the gastric walls, or abscesses surrounded by a thick layer of connective tissue. When a history is available on these animals, it is usually learned that some time previously they had shown some symptoms of gastritis, which subsided after a time without any further evidence of digestive trouble.

* * * *

Treatment of Cutaneous Staphylococcus Infections in Dogs with Specific Anatoxin

The use of staphylococcus anatoxin should be tried in the treatment of cutaneous staphylococcus infections in dogs, according to the results obtained in 19 cases observed by the authors.[98] There is no contraindication, as even an old dog suffering from nephritis could easily stand repeated doses of 2cc of staphylococcus anatoxin. Nevertheless, some dogs do not react sufficiently to the injections of staphylocccus anatoxin to produce specific antitoxin—probably because of absence of natural immunity. In these cases many injections (even six) have to be made. As a rule they are given every four or five days, 0.5cc for the first, 1cc for the second, 2cc for the following injections. A lapse of 10 or 15 days between injections does no harm other than to delay the effect beyond what is attained by treatment at shorter intervals. By joining to the anatoxin therapy the administration of sulfanilamide or its derivatives, the recovery of the animals may be hastened.

* * * *

Trichomoniasis in Mexican Cattle

Bovine trichomoniasis is a widespread disease in the Federal District, Mexico. It is of great economic importance because it is perhaps as prevalent as Bang's disease. The basis for the control and eradication of bovine trichomoniasis on large farms is preventive measures and registration of animals.

* * * *

Two Cases of Poliomyelitis in Animals

The authors[95] have previously reported an ox showing the symptoms and lesions of poliomyelitis. They now describe two similar cases in swine. The infections were spontaneous and of unknown origin. The two stricken animals had been housed together. There was no spread of the infection to other animals. Clinically the illness consisted chiefly of a flabby, nearly complete paralysis of the back. The histological examination showed lesions of the rachidian ganglions and of the inferior horns of the lumbar, dorsal and cervical medulla, which corresponded to those of anterior poliomyelitis in man.

Of course, it is impossible to determine definitely that the affection observed in swine was identical to anterior poliomyelitis in man, because similar lesions and symptoms may be caused by different viruses. Nevertheless, owing to a few cases encountered in practice, and to spontaneous infections observed in laboratory monkeys, the question of poliomyelitis must be considered as extending itself beyond human medicine to the veterinary field.

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[91] Baboni, N., 1937. Des corps étrangers dans l'estomac des Bovides. *Profilassi*, July-August 1937, p. 150. Abst. in *Rec. de Méd. Vét.* 115:8, p. 487.

[98] Holstein, G., and R. Richou, 1938. Essais de traitement des staphylococcies cutanées du chien au moyen de l'anatoxine spécifique, seule ou associée à l'administration de dérivées sulfamidés azoiques ou non azoiques. *Bul. Acad. Vet.* 11:3, p. 158. Abst. in *Rev. de Path. Comp.* 39:516, p. 778.

[97] Landron de Guevara, A., 1940. Breve estudio de la Tricomoniasis Genital Bovina en el Distrito Federal. *Revista Mex. de Med. Vet.* 3:25.

[95] Franchiger and Messerli, 1939. Deux nouveaux cas de poliomyélitis chez des animaux. *Schw. Med. Wochschr.* Jan. 28th. Abst. in *Ann. Méd. Vét.* 11, p. 490.

Silk Sutures for Infected Wounds

Cutler and Dunphy[99] compare the healing of operative wounds sutured with silk and those closed with catgut in animals. Under sterile conditions, parallel wounds were made in an animal's abdomen. These were contaminated with equal amounts of bacterial culture, and one wound was closed with silk and the other with catgut. Only 50% of the silk wounds suppurated, whereas 100% of the catgut wounds opened and discharged a purulent exudate. The infection in the catgut wounds always appeared earlier and was more severe. Healing occurred at about the same time in the two types of wounds that opened. Although some of the silk sutures were extruded from the wounds, healing occurred without delay and the removel or discharge of all the sutures. If heavy silk or continuous sutures were employed, all the silk often had to be removed from the wound before healing was complete. The use of fine black silk (No. 4 Gudebrad) in the clinic in potentially infected and grossly infected surgical conditions, generally in biliary and alimentary tract cases, gave better results than those obtained when catgut was used. Sutures were discharged in 7% of the authors' 263 cases, but the amount of wound infection and the small incidence of hernia, only about colostomy openings, are favorable signs. In 3% of cases of chronic cholecystitis silk sutures were discharged from the wound, and in 11% when an acute infectious condition was being dealt with, but in these cases there were no instances of hernia or disruption and none of the wounds were seriously involved by infection. In gastric, including the duodenum, and cancer cases with gross contamination of the wounds, there was no trouble with the wound —infection, hernia or the discharge of silk sutures. Of 43 operations on the large intestine 2% of the wounds discharged some silk sutures. Hernia developed in two cases; one about a colostomy opening and the other about a Mikulicz procedure; in each of these operations the discharge of fecal contents usually, but not always, seriously contaminates the wound. In gynecologic operations (20 cases) some silk sutures were dicharged in wounds closed without drainage, but the usual convalescence was so smooth that the authors have become better satisfied with silk closure than with catgut. Of 55 cases of acute suppurative appendicitis (including perforated appendicitis with diffuse peritonitis, gangrenous appendicitis with purulent fluid and local peritonitis and appendicitis with abscess formation) 39 wounds healed promptly in from 12 days to four weeks, average 20 days.

[99] Cutler, E. C., and J. E. Dunphy, 1941. Use of silk in infected wounds. *New England Jnl. of Med.* 224, p. 101. Abst. in *J.A.M.A.* 116:16, p. 1874.

Book Review

Milk Sickness Caused by White Snakeroot. *By Edwin Lincoln Moseley,* Professor Emeritus of Biology, State University, Bowling Green, Ohio; Past-President of Ohio Academy of Science. Lithoprinted; paper bound; 171 pages. Published jointly by the Ohio Academy of Science and the author, Bowling Green, Ohio, 1941. $1.00.

This monograph is a comprehensive survey of the known facts about milk sickness (trembles) and the plants which cause it. It represents a painstaking compilation of the literature on the subject over more than a century (some 225 titles are included in the bibliography), as well as personal experiments and observations of the author.

Heretofore no one contribution to medical or veterinary literature has contained the whole story of milk sickness. The advantages of having all the facts about the disease assembled in one book are obvious, and the author has done a notably good job of assembling them. The history of the disease, the areas affected, the etiology, symptoms and lesions of the disease in both man and animals, methods of treatment, the physical and chemical characteristics of white snakeroot, and other pertinent matters are discussed fully and interestingly.

Milk Sickness Caused by White Snakeroot belongs in the library of every physician and veterinarian in areas in which white snakeroot or rayless goldenrod is known to occur, or in communities using dairy products or meat products from such areas.

Louis Pasteur

Louis Pasteur, the subject of our front cover illustration this month, was by training a chemist; not a physician, nor a veterinarian; yet his contributions to medical and veterinary science far exceeded his discoveries in the field of chemistry, which were by no means small.

Pasteur was born in Dole, a village in France, December 27, 1822. He was the son of a tanner who had been a sergeant in Napoleon's army. It is said that Pasteur père's admiration for the career of the "Little Corsican" was responsible for his ambition to give his son an education much better than that which was usual for one in his station.

At the age of 26, Pasteur had attained an international reputation by his studies of tartaric acid. In rapid succession he held the positions of Professor of Physical Sciences at Dijon, Professor of Chemistry at Strasbourg, Dean of the Faculty of Sciences at Lille, Science Director of the École Normale at Paris, Professor of Geology, Physics and Chemistry at the École des Beaux Arts and, at the age of 45, Professor of Chemistry at the Sorbonne. After 1875 he carried on his researches at the Pasteur Institute.

Pasteur's studies of tartaric acid, which had first brought him fame, were made on this substance as developed in wine and when, in 1854, the brewers were experiencing great losses from failure of fermentation in many of their vats, they turned to Pasteur, then dean of the Faculty of Science at Lille, for the solution of their problem. This resulted in his famous discovery of the processes of fermentation. It also started Pasteur on his amazing career of achievement in the field of biology, the study of which occupied the remainder of his life.

Before Pasteur was born, Spallanzani had demonstrated the falsity of the theory of spontaneous generation, but his work had received but partial acceptance in scientific circles and elsewhere no credit at all. Following his studies of fermentation, Pasteur set about proving that all life derives from life, and so thoroughly did he explode the theory of spontaneous generation that it became a scientific *faux pas* to entertain the thought that any disease might result from other than infection. This ascendancy of bacteriology continued for more than a half century and delayed materially progress in the study of nutritional diseases. In fact, nutritionists still have to struggle with bacteriophobia for acceptance of their findings. However, this work revolutionized surgery and gave birth to preventive medicine. "Permit me," wrote Lister, "to thank you for having given me the single principle which has made antiseptic surgery a success."

The silk industry of France was menaced by pébrine, a disease of the silkworm, and in 1865 Pasteur went to southern France to study this disease. Within three years he was completely successful and prosperity returned to southern France. Ten years later, it was stated that the value of his services to the brewing industry and the silk industry had already equaled the amount of the war indemnity—a billion francs—imposed upon France following the Franco-Prussian War.

From 1875 to his death in 1895, Pasteur spent 20 fruitful years on research into the diseases of men and animals, principally the latter. Although severely handicapped by ill health in his later years, the value of his services to mankind were beyond all computation. He proved that anthrax is an infection, discovered its mode of transmis-

sion, and developed a vaccine for its prevention. He did the same for fowl cholera.

For at least two thousand years before the time of Pasteur, rabies had been a horror to mankind, and Pasteur's popular fame is due more to his development of a vaccine for its prevention than to any other single achievement. In going through old veterinary journals it is noted that practically every issue mentioned deaths of persons from rabies, mentioned quite incidentally in connection with a discussion of the disease in animals. It was certainly no rarity before Pasteur's time. The apprehension of the victim of the bite of a rabid dog is distressing even now. How much greater it must have been before Pasteur's discovery gave him hope of survival!

In the fields of chemistry and industry the discoveries of Pasteur received immediate acclaim. When his work led him into the field of medicine and public health, his path was often rough. Too earnest to be diplomatic, he often offended leaders in the medical profession. Too enthusiastic to be modest, he sometimes gave them ground for criticism, which they exploited to the limit. In plain words, he was more than a bit cocky. Fortunately for Pasteur and for the public, veterinarian Henri Bouley, a leader in the field of science in France and president of the French Academy of Science, was always a staunch friend of Pasteur and a powerful supporter of his theories. But for the enthusiastic support of Bouley and through him, of the whole veterinary profession of France, acceptance of Pasteurs' discoveries would undoubtedly have been delayed for years.

In America, too, Pasteur's discovery of a means of preventing rabies was first accepted by the veterinary profession. It is noteworthy that the first victim of a mad dog to go from the United States to Paris for the Pasteur treatment was taken there by a veterinarian—Dr. Frank Billings of Lincoln, Nebraska. It was, of course, owing to Bouley's prestige in this country that Pasteur was readily accepted by American veterinarians.

Pasteur's contributions to knowledge of veterinary science were enormous, and the more astounding when it is remembered that his studies were handicapped by laboratory technique extremely crude and laboratory appliances almost unbelievably primitive. Veterinary medicine is deeply indebted to the genius and industry of Pasteur and it is appropriate that veterinarians should pay tribute to his memory when occasion offers. Maurice Hall once said that if the veterinary profession of America could produce a Pasteur, its problem of winning public recognition would be solved for all time.

* * * *

Rabies Capital Moved

Birmingham, Alabama, which, for several years, has merited the distinction of being the principal rabies center in the United States, must give way to Houston, Texas, if that dubious bid to notoriety is to be awarded on the record for prevalence.

State Health Commissioner Cox has recently informed the mayor of Houston that one-third of all the Pasteur treatments supplied by the State Health Department for use in the whole state, go to Houston. City Health Commissioner Brown (Houston) states that 671 dogs' heads were examined in the city laboratory last year and that 284 of them were found positive for rabies. It is his opinion that not more than half of the heads of rabid dogs are sent to the city laboratory. This would give the city an annual rabies incidence of nearly 600 cases among an estimated 75,000 dogs. Well, it could be worse and undoubtedly will be worse if the Houston plan of rabies control is not radically changed.

At present the Houston humane association receives the dog license fees and in turn handles the control measures for rabies through the City Humane Society Board. The city health commissioner states that rabies is a menace to the public in Houston. Possibly it is worth mentioning that in nearby Beaumont, there is no rabies problem among the dogs or citizens. Beaumont has a compulsory anti-rabies vaccination ordinance, which is reasonably well enforced. The humane society in Houston opposes vaccination.

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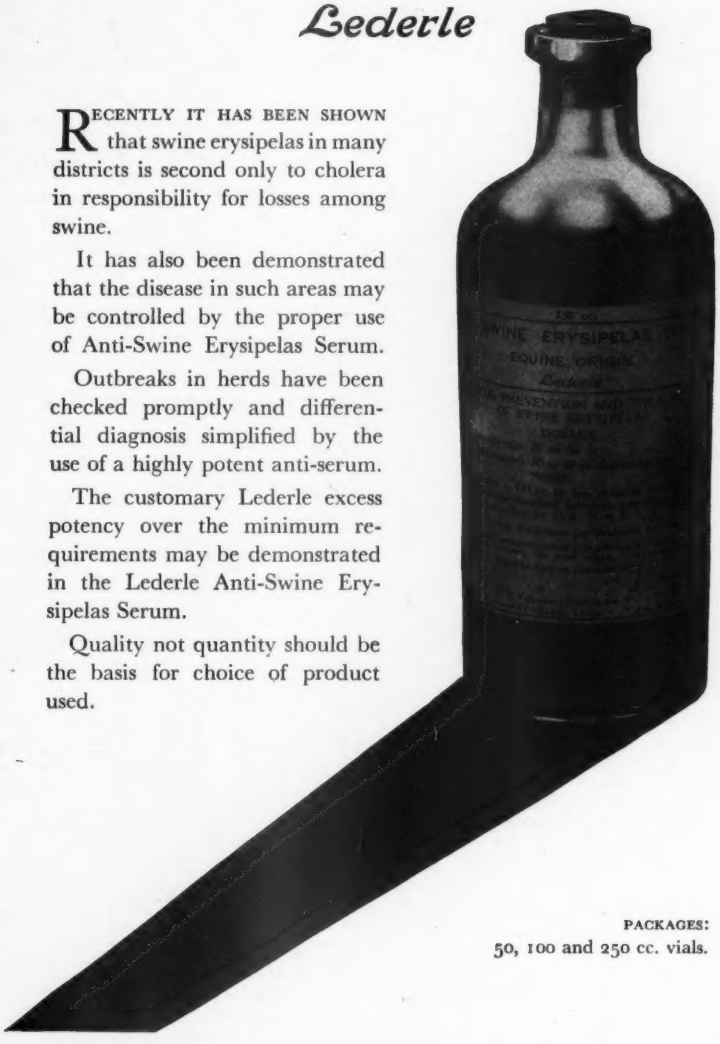

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■

Norman J. Pyle, editor of Lederle's *Veterinary Bulletin*, has been ordered to extended active duty as a Major in the Veterinary Corps. Maj. Pyle is to be Commanding Officer of the 2nd Medical Laboratory, Fort Sam Houston, Tex. . . . He is the second editor of a veterinary house organ to answer the call to colors; it will be remembered that Jen-Sal's R. L. Anderes was ordered to active duty last January.

N. J. Pyle

■

During the middle ages, in Europe, it was customary to try cases against bothersome animals such as rats and wolves in the ecclesiastical courts. Usually the defendants were solemnly summoned three times to appear in court, an officer of the court serving the summons by reading it aloud in places frequented by the animals; and when they failed to appear, judgment by default was entered against them. The judge then issued a warning to the animals to leave the district under penalty of extermination. If they neglected to heed this warning, the threat of extermination was put into effect. . . . At least, that is the way the edict read. When Chassanee, the famous French lawyer, was named as advocate for the rats infesting a certain district, matters were different. He made the point that a summons from the court implied full protection to the parties summoned, on their way to and from the court, and claimed that his clients, the rats, although most anxious to appear, in obedience to the order of the court, did not dare leave their holes on account of the large number of evilly disposed cats maintained by the plaintiffs. He insisted, therefore, that the plaintiffs should enter into bonds under heavy penalties that their cats should not molest his clients, promising that when that was done, the summons would be obeyed at once. . . . The plaintiffs declined to be bound for the good behaviour of their cats, and the case of the rats is still pending.

Science News Letter gives us the thought that "All work and no play makes chick a model fowl—chicks that scratch for a living get tired and rest often, while brooder chicks that have feed furnished them stray and get into mischief."

■

Roger Giles, Surgin, Doctored Hosses and Clipped Donkies Wance a Munth

The following was copied from a signboard found in a Cornish village, and now in the Horniman Museum, London, England, according to J. W. Fleming:

ROGER GILES, SURGIN

Parish clark and skulemaster, groser and undertaker, respectably informs ladys and gentleman that he drors teef without wateing a minit, applies laches every hour, blisters on the lowest tarms and vizicks for a penny a peace. He sells godfather's kordales, kuts korns, bunyons, doctors hosses, clips donkies wance a munth and undertakes to luke arter every bodies nayles by the ear. Joes-harps, penny wissels, brass kanel-sticks, fryinpans & other moozikal hinstruments hat grately reydoosed figers. Young ladys and gentleman larnes their grammur and langeudge in the purtiest mannar. Also grate care taken of their morrels & spellin. Also zarm-zinging, tayching the base vial & oll other zorts of fancy works, quadrils, pokers, weazles & oll country dances tort at home and abroad at perfekshun, perfumery and snuff in oll its branches. As times is cruel bad I begs to tell ee that I has just beginned to sell oll zorts of stashonary ware, cox, hens, vouls, pigs, and oll other kind of poultry. Blackin-brishes, herrins, coles, scrubbin-brishes, traykel, and godley bukes & bibles. Mise traps, brick dist, whisker seeds, morrel pokkerankerchers and oll zorts of swatemaits including taters, sassages, and other garden-stuff. Bakky, zizars, lamp oyle, tay kittles and other intoxikating likkers. A dale of fruit, hats, zongs, hareoyle, pattins, bukkits, grindstones and other aitables. Korn and bunyon zalve and oll hardware. I has laid in a large azzortment of trype, dogs mate, lollipops, ginger beer, matches & other pickles such as hepsom salts, hoysters, winzer sope, anzetrar. Old rags bort and zold here. Newlayd eggs by me Roger Giles. Zinging burdes keeped sich as howls, donkies, payrox, lobsters, crickets, also a stock of a celebrated brayder. I tayches gography, rithmetic, cowsticks, jimnasticks, and other chynees-tricks.

GODE SAVE THEE KINGE.

Coming Meetings

Maryland State Veterinary Medical Association, Baltimore County Humane Society, Pikesville, Md., June 18-19.

Ohio State University Veterinary Conference, Ohio State University, Columbus, June 18-20.

South Carolina Association of Veterinarians, Andrew Jackson Hotel, Rock Hill, June 24-25.

North Carolina State Veterinary Medical Association, Wrightsville Beach, June 26-27.

Wisconsin Veterinary Medical Association, Chippewa Falls, June 27-28.

Vermont Veterinary Medical Association, Randolph, June 27-28.

New York State Veterinary Medical Society, Ithaca, July 1-3.

Montana Veterinary Medical Association, Helena, July 7-8.

Virginia State Veterinary Medical Association, The Virginian Hotel, Lynchburg, July 9-10.

Veterinary Medical Association of New Jersey, Berkeley-Carteret Hotel, Asbury Park, July 10-11.

Georgia State Veterinary Association, Tosco Hotel, Thomasville, July 16-17.

American Veterinary Medical Association, Murat Theater and Shrine Temple, Indianapolis, Ind., August 11-15.

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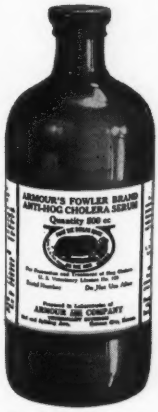

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You'll Be Interested to Know That . . .

One of the most assiduous attenders of A. V. M. A. meetings is Dr. H. H. Baur of Monroe, La. Since he joined the A. V. M. A. and drove to the Lexington meeting in 1926 in a Model T Ford, Dr. and Mrs. Baur have attended every meeting of the national association except the 1938 meeting in New York, the total mileage covered making an impressive total. . . . They intend to be among those present at Indianapolis in August.

■

Norman J. Pyle, editor of Lederle's *Veterinary Bulletin*, has been ordered to extended active duty as a Major in the Veterinary Corps. Maj. Pyle is to be Commanding Officer of the 2nd Medical Laboratory, Fort Sam Houston, Tex. . . . He is the second editor of a veterinary house organ to answer the call to colors; it will be remembered that Jen-Sal's R. L. Anderes was ordered to active duty last January.

N. J. Pyle

■

During the middle ages, in Europe, it was customary to try cases against bothersome animals such as rats and wolves in the ecclesiastical courts. Usually the defendants were solemnly summoned three times to appear in court, an officer of the court serving the summons by reading it aloud in places frequented by the animals; and when they failed to appear, judgment by default was entered against them. The judge then issued a warning to the animals to leave the district under penalty of extermination. If they neglected to heed this warning, the threat of extermination was put into effect. . . . At least, that is the way the edict read. When Chassanee, the famous French lawyer, was named as advocate for the rats infesting a certain district, matters were different. He made the point that a summons from the court implied full protection to the parties summoned, on their way to and from the court, and claimed that his clients, the rats, although most anxious to appear, in obedience to the order of the court, did not dare leave their holes on account of the large number of evilly disposed cats maintained by the plaintiffs. He insisted, therefore, that the plaintiffs should enter into bonds under heavy penalties that their cats should not molest his clients, promising that when that was done, the summons would be obeyed at once. . . . The plaintiffs declined to be bound for the good behaviour of their cats, and the case of the rats is still pending.

Science News Letter gives us the thought that "All work and no play makes chick a model fowl—chicks that scratch for a living get tired and rest often, while brooder chicks that have feed furnished them stray and get into mischief."

■

Roger Giles, Surgin, Doctored Hosses and Clipped Donkies Wance a Munth

The following was copied from a signboard found in a Cornish village, and now in the Horniman Museum, London, England, according to J. W. Fleming:

ROGER GILES, SURGIN

Parish clark and skulemaster, groser and undertaker, respectably informs ladys and gentleman that he drors teef without wateing a minit, applies laches every hour, blisters on the lowest tarms and vizicks for a penny a peace. He sells godfather's kordales, kuts korns, bunyons, doctors hosses, clips donkies wance a munth and undertakes to luke arter every bodies nayles by the ear. Joes-harps, penny wissels, brass kanel-sticks, fryinpans & other moozikal hinstruments hat grately reydoosed figers. Young ladys and gentleman larnes their grammur and langeudge in the purtiest mannar. Also grate care taken of their morrels & spellin. Also zarm-zinging, tayching the base vial & oll other zorts of fancy works, quadrils, pokers, weazles & oll country dances tort at home and abroad at perfekshun, perfumery and snuff in oll its branches. As times is cruel bad I begs to tell ee that I has just beginned to sell oll zorts of stashonary ware, cox, hens, vouls, pigs, and oll other kind of poultry. Blackin-brishes, herrins, coles, scrubbin-brishes, traykel, and godley bukes & bibles. Mise traps, brick dist, whisker seeds, morrel pokkerankerchers and oll zorts of swatemaits including taters, sassages, and other garden-stuff. Bakky, zizars, lamp oyle, tay kittles and other intoxikating likkers. A dale of fruit, hats, zongs, hareoyle, pattins, bukkits, grindstones and other aitables. Korn and bunyon zalve and oll hardware. I has laid in a large azzortment of trype, dogs mate, lollipops, ginger beer, matches & other pickles such as hepsom salts, hoysters, winzer sope, anzetrar. Old rags bort and zold here. Newlayd eggs by me Roger Giles. Zinging burdes keeped sich as howls, donkies, payrox, lobsters, crickets, also a stock of a celebrated brayder. I tayches gography, rithmetic, cowsticks, jimnasticks, and other chynees-tricks.

GODE SAVE THEE KINGE.

Coming Meetings

Maryland State Veterinary Medical Association, Baltimore County Humane Society, Pikesville, Md., June 18-19.

Ohio State University Veterinary Conference, Ohio State University, Columbus, June 18-20.

South Carolina Association of Veterinarians, Andrew Jackson Hotel, Rock Hill, June 24-25.

North Carolina State Veterinary Medical Association, Wrightsville Beach, June 26-27.

Wisconsin Veterinary Medical Association, Chippewa Falls, June 27-28.

Vermont Veterinary Medical Association, Randolph, June 27-28.

New York State Veterinary Medical Society, Ithaca, July 1-3.

Montana Veterinary Medical Association, Helena, July 7-8.

Virginia State Veterinary Medical Association, The Virginian Hotel, Lynchburg, July 9-10.

Veterinary Medical Association of New Jersey, Berkeley-Carteret Hotel, Asbury Park, July 10-11.

Georgia State Veterinary Association, Tosco Hotel, Thomasville, July 16-17.

American Veterinary Medical Association, Murat Theater and Shrine Temple, Indianapolis, Ind., August 11-15.

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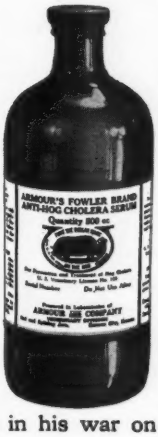

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State Board Examinations

North Carolina State Board of Veterinary Examiners, Wrightsville Beach, June 25.

Connecticut Board of Veterinary Registration and Examination, State Office Bldg., Hartford, Conn., July 1.

Oklahoma Board of Veterinary Medical Examiners, State Capitol Bldg., Oklahoma City, July 1-2. Secretary, W. C. McConnell, Holdenville, Okla.

Indiana Veterinary Examining Board, Room 209-210 State House, Indianapolis, July 8. Inquiries should be addressed to Dr. J. L. Axby, Secretary, at the same address.

Virginia State Board of Veterinary Examiners, Lynchburg, July 9. Application blanks and further information may be secured from H. H. Adair, Secretary, Bristol, Va.

Maine Board of Veterinary Examiners, July 14. For further information address S. W. Stiles, Secretary, Falmouth Foreside, Me.

Utah Veterinary Medical Examining Board, Room 302, Capitol Bldg., Salt Lake City, July 14-15. Applicants must submit applications and diplomas and a $15 examination fee, either to the Department of Registration, 326 Capitol Bldg., or to the secretary, W. H. Hendricks, 302 Capitol Bldg., Salt Lake City, Utah. Application blanks furnished on request.

Illinois State Board of Veterinary Examiners, State Department of Registration and Education, 600 S. Michigan Ave., Chicago, July 28-29. Applications should be filed with the Department 20 days before this date.

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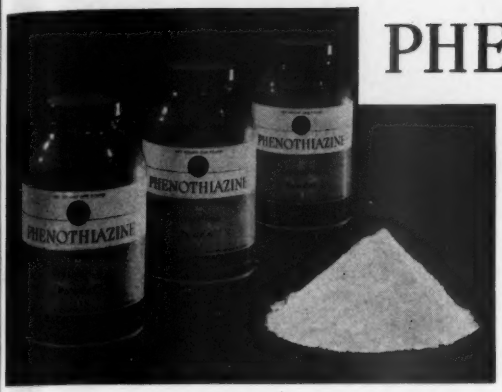

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Army Veterinary Corps

Transfers.—Col. Clifford C. Whitney, from Fort Brown, Tex., to Eighth Corps Area Service Command, Camp Bowie, Tex., May 10; Lt. Col. Chauncey E. Cook, from Fort Benning, Ga., to Puerto Rican Department, leaving from Charleston, S. C., May 31; Lt. Col. Kenneth E. Buffin, from Hawaiian Department to San Francisco Port of Embarkation, Fort Mason, Calif.; Maj. Harvie R. Ellis, from Fort Bliss, Tex., to First Cavalry Division at that station.

Veterinary Corps Reserve

Promotions. — To Major: Capt. Michael Shipley, May 27; to Major (temporary): Capts. Fred Ray Pettys, May 17, and Charles Herbert Elliott, May 27; to Captain: 1st Lts. William Francis Tierney, Apr. 30; Arthur Reinhardt Thiele, May 8; Harold Leon Decker, May 9; Robert Louis Alkire, May 13; Robert William Cook, May 13; Philip Ray Carter, May 21; Edwin Stranel Wiseman, May 21.

Ordered to Extended Active Duty.—Lt. Col. Delwin Morton Campbell, to Fort Bliss, Tex., June 16; 1st Lt. Clyde Irwin Boyer, Jr., to Army Medical Center, Washington, May 21.

Transfers. — Capt. Charles P. Hesse, from Fort Knox, Ky., to Air Base, New Orleans, La., May 15; 1st Lt. Philip R. Carter, from Army Medical Center, Washington, D. C., to St. Johns. Newfoundland; 1st Lt. Robert J. Au, from Seattle Quartermaster Depot, Seattle.

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Wash., to East Central Remount Area, Lexington, Ky., June 20; 1st Lt. Raymond R. Houser, from East Central Remount Headquarters, Lexington, Ky., to Front Royal Quartermaster Depot, Front Royal, Va.; 1st Lt. Garrett H. McNay, from Fort Reno, Okla., to Troop A, 252d Quartermaster Squadron, at that station; Capt. Fred M. Burkey, from Fort Bliss, Tex., to Puerto Rican Department, leaving Charleston, S. C., June 20; 1st Lt. William E. Kraus, from Fort McIntosh, Tex., to Panama Canal Department, leaving Charleston, S. C., June 28; 1st Lt. Hendrik Versluis, from Army Medical Center, Washington, D. C., to Headquarters, Seventh Corps Area, Omaha, Nebr., June 30; Capt. Earl T. Martin, from Fort Ord, Calif., to Hawaiian Department, leaving San Francisco, Calif., July 16; Capt. John M. Broadwell and 1st Lts. Lee R. Chapman, Wendell L. Kanawyer, James R. Ketchersid, Charles W. Tate, and Horace R. Willard, from Fort Bliss, Texas, to First Cavalry Division at that station; to the Hawaiian Department, leaving New York, N. Y., June 26: Capts. Everett B. Miller, From Fort Belvoir, Va., and Sol G. Stephan, from Fort Thomas, Ky.; to the Chicago Quartermaster Depot, Chicago, Ill., June 20: Capts. Max H. Carlin, from Fort Adams, R. I., and Michael Shipley from Camp Bowie, Tex., and 1st Lts. Ray M. Batchelder, from Fort Benjamin Harrison, Ind.; Harold L. Geick, from Fort Riley, Kans.; Frank W. Jordan, from Fort Jackson, S. C.; William S.

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■

Hugh M. O'Rear who, after almost 12 years in the Tuberculosis Eradication Division of the B. A. I., in Washington, D. C., has left the national capital to assume the duties of Inspector in Charge of Field Activities for the Bureau of Animal Industry, U. S. Department of Agriculture, in California. Doctor O'Rear is filling the vacancy caused by the retirement of Dr. W. E. Howe.

Deaths of Veterinarians

A. E. Amend, Kansas City Veterinary College '06, December 6, 1940.

M. H. Leininger, Omaha, Neb., Kansas City Veterinary College '11, B.A.I., March 2.

Elmer R. Davis, Kansas City, Mo., St. Joseph Veterinary College, practiced at Norborne, Mo., 1925-1931, March 2.

Michael Vincent Gallivan, 65, Sault Ste. Marie, Ont., Queen's University '98, practiced at Iroquois, Ont., until 1904, when he joined the Royal North West Mounted Police as Veterinary Inspector for the Health of Animals Branch of the Dominion Department of Agriculture; from 1920 to 1929 occupied a position in the Pathological Division at Ottawa, returning to field service from 1929 to 1940, when he retired. March 19.

Frank C. Herbert, 78, Plainfield, N. J., New York College of Veterinary Surgeons '88, practiced for over 50 years in Plainfield and North Plainfield, where he also served as councilman for 15 years, March 28.

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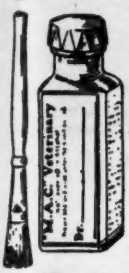

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Gus Frederickson, 56, Woden, Ia., McKillip Veterinary College '20, April 2.

George William Thurber, 67, Loyal, Wis., Chicago Veterinary College '13, April 2.

Nicholas J. Kaiser, 67, Newark, N. J., American Veterinary College '95; practiced in Newark for 45 years, veterinarian to the Newark Police Department, April 3.

P. E. Nulph, 64, Campbellsport, Wis., Grand Rapids Veterinary College '12, April 5.

R. C. Calkins, 56, Rock Island, Ill., Chicago Veterinary College '08, practiced at Fairbury, Ill., until 1928, when he moved to Rock Island, April 8.

Lewis J. Drum, 76, Cleveland, Ohio, Ontario Veterinary College '91, identified with the Cleveland Humane Society for 20 years, retiring about 15 years ago, April 11.

George William Iden, 57, Bluemont, Va., U. S. College of Veterinary Surgeons '21, April 12.

Leonard R. Pratt, 39, Denver, Colo., Colorado State College '23, April 28.

C. A. Burnette, 57, Winsted, Conn., Ontario Veterinary College '16, May 4.

M. W. Drake, 76, Philadelphia, Pa., New York-American Veterinary College '90, May 6.

Henry E. Batt, Guelph, Ont., Ontario Veterinary College '15, May 11. Doctor Batt came to Canada from England in 1907, farming on a homestead in Saskatchewan until 1912, when he entered the Ontario Veterinary College. After graduation he practiced for a time with Dr. W. J. R. Fowler, then became attached as a veterinary inspector with the Department of Health, Toronto, serving as inspector in charge of the city abattoir until 1918. In that year he joined the staff of the Ontario Veterinary College as Instructor in Histology and Meat Inspection, continuing in this capacity until his death May 11.

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Red Heart Dog Biscuits are made of meat and bone scraps, marrow meat and bone, fresh meat, dry skimmed milk, fresh egg yolk, cereals, malt, and wheat germ. Furnish abundance of Anti-infective Vitamin A, Anti-neuritic Vitamin B_1, and Sunshine Vitamin D.

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